

Research Project Portfolio

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ACTing on Perfectionism

**A Single Case Experimental Design examining the effect of Acceptance and
Commitment Therapy on Multidimensional Perfectionism**

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Portfolio Abstract

Perfectionism is a personality construct argued to be widespread with the potential for incapacitation (Pacht, 1984). It has been linked with a host of psychological difficulties impacting on social and occupational problems as well as physical and mental health. Interest in multi-dimensional perfectionism is growing and the search to uncover the domains within perfectionism which are adaptive, and should be nurtured, or maladaptive, and requiring intervention, remains ongoing. Perfectionism is considered transdiagnostic and targeting this construct may lead to symptom reduction across a range of other difficulties (Howell, et al., 2016). Cognitive Behavioural Therapies (CBT) are the current focus of interventions for perfectionism. Research has indicated some success in managing perfectionistic traits through CBT techniques, however, there are limitations to these studies.

Acceptance and Commitment Therapy (ACT), a third wave CBT approach, focuses on altering the function of thought processes and changing the relationship with private events rather than trying to change the event itself (Guarna, 2009). This approach claims to be transdiagnostic and therefore may be an appropriate alternative to traditional CBT techniques for perfectionism.

A multiple single case design was employed to examine the effect of a guided self help ACT intervention on perfectionism across five replications using self report and behavioural tasks as outcome measures. The effect of specific ACT processes was examined.

Results were inconsistent across participants but some replication of effect was found for improved psychological flexibility, perfectionism and distress. The findings indicate that a guided self help ACT intervention could be an effective treatment for perfectionism, as decreased perfectionism and decreased self reported distress were found following the intervention. Further research is warranted to examine the impact of this intervention further.

Statement of Contribution

Journal article and extended paper

- Project Design: Dr David Dawson, Dr Mark Gresswell and Jenna Hunt
- Applying for ethical approval: Jenna Hunt
- Recruiting participants: Jenna Hunt
- Data collection: Jenna Hunt. Creation of online measures supported by Dr David Dawson and Dr Mark Gresswell
- Conducting the change interviews: Ruth Barrett-Naylor
- Data entry: Jenna Hunt
- Data analysis: Jenna Hunt, supported by Dr David Dawson and Dr Mark Gresswell
- Write up: Jenna Hunt, supervised by Dr David Dawson and Dr Mark Gresswell

Systematic Review

An examination of the psychometric properties of the multi-dimensional perfectionism scales. A systematic Review¹

Author: Jenna Hunt

This review was completed as part of the Trent DClinPsy Programme.

Abstract

Background: Perfectionism has been associated with a variety of psychopathologies across the years. Two measures are routinely used within the perfectionism literature; the Frost Multi-dimensional Perfectionism scale (FMPS; Frost, et al., 1990) and the identically named multi-dimensional perfectionism scale (MPS-H; Hewitt & Flett, 1991). This review aims to examine the psychometric properties of these measures and consider whether they are a reliable and valid tool for measuring multidimensional perfectionism.

Method: A systematic review was completed by searching four databases with specific search criteria resulting in 17 articles examining the psychometric properties of either the FMPS or the MPS-H. These articles were quality assessed using the COSMIN.

Results: Both scales were found to have good internal consistency however stability data was only outlined in three papers making it difficult to conclude reliability of the scales overall. The review discovered great debate among researchers regarding the factor structure of multidimensional perfectionism with arguments for 3, 4, 5 and 6 factor solutions. The number of relevant items in the scales is also argued making it difficult to draw conclusions regarding both the construct and content validity of the scales.

Conclusions: The lack of consensus regarding the factor structure of the perfectionism scales calls their validity into question. The limitations of this review are discussed as well as recommendations for future research.

Key Words: Perfectionism; Multidimensional perfectionism; FMPS; MPS-H; Psychometric

¹ This review is written in accordance with Instructions for Authors for the Journal of Psychopathology and Behavioural Assessment (See <http://www.springer.com/psychology/journal/10862> for guidelines).

Background

Perfectionism has gained increasing attention over the years, described as a collection of cognitions related to expectations and evaluations of the self and others (Burns, 1980), it's considered a personality trait characterised by the setting of high standards and self-criticism (Amaral et al., 2013).

Perfectionism is considered to have two domains, often termed “normal” or “adaptive” and “neurotic” or “maladaptive” (Hamachek, 1978). Adaptive perfectionism is considered to support individuals to reach goals whereas maladaptive perfectionism is associated with psychological distress (Hamachek, 1978). Burns (1983) was the first to consider perfectionism in relation to exceedingly high standards, arguing that neurotic perfectionists set unachievable high standards and striving for achievement controls their lives. Maladaptive perfectionists' self-worth appears dependent on achievement of these high, rigid standards (Shafran & Mansell, 2001), often accompanied by fear of failure leading to shame and problematic behaviours such as avoidance and procrastination (Bieling et al., 2004). It is maladaptive perfectionism that's suggested to require intervention due to its strong associations with psychological distress.

Perfectionism is believed to develop from parent-child relationships. Interactions with overly critical parents, absent or inconsistent parental approval and high parental expectations (Shafran & Mansell, 2001) are suggested to lead a child to seek parental approval, overvalue achievement and neglect their own emotional needs (Hamachek, 1978; Sorotzkin, 1998).

Perfectionism is complex with theorists arguing its multi-dimensional nature allowing for consideration of both positive and negative aspects (Frost et al., 1990). The suggested positive aspects are in line with Hamachek's (1978) “normal” perfectionism and relate to striving for achievement with flexibility, whereas negative perfectionism has been linked to rigid goal setting and high levels of self-criticism (Khawaja & Armstrong, 2005). Concern over mistakes, high standards, fear of failure and the role of parenting are all suggested dimensions to perfectionism (Burns, 1980; Frost et al., 1990).

Research highlights associations between perfectionism and psychopathologies including depression (O'Connor, Rasmussen & Hawton, 2010), suicidality (Hamilton & Schweitzer, 2000), anxiety disorders (Hewitt, et al., 2002) and eating disorders (Hewitt, Flett & Ediger, 1995). Fear of making mistakes has been associated with feelings of hopelessness increasing vulnerability to depression and significant relationships have been found between perfectionism and suicidal ideation (Shafran & Mansell, 2001). Suicide prevention is a primary concern in the department of health (HM Government, 2014) and consideration of the role of perfectionism in this is key to developing effective interventions. High levels of perfectionism have been found in student populations (Mills & Blankstein, 2000) and research has shown students to have higher rates of depression than the general population (Ibrahim, Kelly, Adams & Glazebrook, 2013). The results of these studies speak to the importance of a full understanding of maladaptive perfectionism and accurate assessment of this as a means to developing effective interventions for those at risk of depression, suicide and other psychopathologies.

The most researched and commonly used measures of perfectionism are the identically titled multidimensional perfectionism scales (MPS's). Confusingly, these scales have different factors relating to the dimensions of perfectionism.

FMPS - Frost, Marten, Lahart and Rosenblate (1990)

The FMPS was developed by combining items from previous measures of perfectionism with new items related to dimensions discussed within perfectionism literature. Frost et al. (1990) surmised that the overarching features highlighted in the literature were related to concern about mistakes, doubts about actions, high standards combined with self-criticism and the role of parenting.

The FMPS is a 35 item self-report questionnaire using a five point Likert scale ranging from “strongly agree” to “strongly disagree”. The items load onto six factors (subscales) leading to scores for each factor as well as an overall perfectionism score. The concern over mistakes (CM) factor relates to a person's tendency to equate mistakes with failure, it includes 9 items with questions such as *“I should be upset if I make a mistake”*. The personal standards (PS) factor contains 7 items, such as *“I set higher goals than most people”* and is related to setting high standards and the disproportionate importance placed on those standards. 4 items, such as *“I usually have doubts about the single everyday things I do”*, make up the doubts about actions (DA) factor which regards concern that actions have not been completed satisfactorily. There are two factors related to parenting and the belief that one's parents set high standards and are overly critical; Parental criticism (PC), contains 4 items including *“As a child, I was punished for doing things less than perfect”* and Parental expectations (PE) containing 5 items such as *“My parents set very high standards for me”*. The final factor titled organisation (O), a preference for order, contains 6 items, including *“I am a neat person”*.

Factor analysis revealed associations between all the subscales with the exception of O, therefore this scale score isn't included in the overall perfectionism score.

MPS-H - Hewitt and Flett (1991)

This scale contains 45 items loading onto three factors. Self-oriented perfectionism (SOP) contains 15 items relating to individual's high and often unrealistic expectations of themselves, e.g., *“I set very high standards for myself”*, other oriented perfectionism (OOP) where one expects perfection from others also contains 15 items including *“Everything that others do must be of top-notch quality”* and the final 15 items, including *“The people around me expect me to succeed at everything I do”* load into self-prescribed perfectionism (SPP) which is the belief that others expect perfection from you.

The MPS-H uses a five point Likert scale ranging from “agree” to “disagree”. It is credited for controlling for response bias by including negatively keyed items (De Cuyper, et al., 2015).

Psychometric assessments are used to make clinical judgments, inform treatment interventions and evaluate treatment effects (Haynes, Richard & Kubany, 1995). The MPS's consider the maladaptive side to perfectionism as problematic and requiring modification in order to reduce psychological distress (Bieling et al., 2004) however some researchers question whether the MPS's actually measure the concept of perfectionism (Shafran & Mansell, 2001). Given extant theoretical and empirical research suggesting perfectionism is implicated in psychopathology, it is important to be able to capture and monitor perfectionist tendencies therefore examination

of the psychometric properties of the measures of perfectionism may enhance the ability to effectively measure and assess multi-dimensional perfectionism and produce good quality reliable and valid data regarding perfectionism and psychopathology. This may support assessment and intervention outcomes within clinical practice as well as supporting research to aid understanding of the role of perfectionism in psychological difficulties.

This review aims to examine the psychometric properties of the FMPS and MPS-H as they are currently the most widely used perfectionism measures. Both measures claim to assess the same construct of perfectionism despite concluding different factor structures. It's questioned why there is a need for two measures if they are measuring the same construct from a similarly multidimensional perspective. The literature retrieved from the systematic search will be subject to a quality assessment.

Method

A systematic strategy was employed to find relevant research into the psychometric properties of the MPS's to consider whether they are a reliable and valid measure of perfectionism.

Search Strategy

Four computer databases were searched, Embase, Medline, Cinahl and Psycinfo, using the following search criteria;

Measur* OR outcome* OR assess* OR evaluat* OR test* OR Psychometric* OR question* AND perfection* OR "high standards" OR "striving". A further search was conducted on the databases using the term "multi*dimensional perfectionism scale".

Selection (See Appendix A)

Exclusion criteria were applied to the searches by limiting to English language texts and adult populations. This returned 3926 results. 3871 references were discarded following examination of relevance through exploration of titles and abstracts. The remaining references were located in full text. 38 were then excluded as their focus wasn't psychometric properties. One paper was discarded as it was a review and not a primary study however scrutinisation of the reference list led to the addition of one paper. The remaining 17 articles were reviewed.

The primary aim of the review was to examine the psychometric properties of the MPS's with a secondary aim of assessing the quality of the studies. With this in mind, studies were not excluded on the basis of poor methodology.

The COSMIN (Consensus-based Standards for the selection of health Measurement Instruments) is a quality assessment tool developed to provide consensus of the properties that should be evaluated in health related measurement instruments and to develop standards for evaluation (COSMIN, 2012). The COSMIN recommends a four item rating scale for assessing psychometric properties of healthcare instruments when conducting a systematic review. The items include "excellent", "good", "fair" and "poor". This scale was employed in assessing the quality of studies for this review. The scale posits that the worst score is the final score,

therefore if a study receives “excellent” ratings for the majority of items related to reliability but one “fair” rating then a rating of “fair” will be received.

Results

Reliability and validity of psychometric measures are considered paramount in psychological research to give credibility to the conclusions drawn (Coolican, 1999). In this review, examination of reliability focussed on the internal consistency of the measures and the stability of the measures over time (test-re-test reliability). Validity has been assessed in terms of content validity, construct validity and criterion validity. An overview of what is meant by each of these terms is provided in each section.

Table 1 highlights the key findings from each of the articles reviewed.

Table 1

Studies and key information regarding the psychometric properties of the MPS's

Author/Date/Location	Participants	Measure	Internal Consistency (α)	Stability	Content Validity	Structural Validity	Criterion Validity
1. Amaral, et al., (2013), Portugal	217 students. Mean age 18.5, 82% female, 18% male	FMPS (Portuguese version)	CM 0.83 PS 0.74 PE 0.90 PC 0.88 DA 0.82 O 0.93 COSMIN rating: Fair	$r=0.77^{***}$ COSMIN rating: Fair		Supported the original 6 factor structure and a 4 factor structure. COSMIN rating: Fair	$r=0.61^{***}$ MPS-H COSMIN rating: Fair
2. Clavin, Clavin & Gayton (1996), USA	41 male students	FMPS	Total 0.81 COSMIN rating: Fair			High correlations between FMPS and M-OCI, $r=0.49^{**}$. COSMIN Rating: Poor	
3. Cox, Enns & Clara (2002), Canada	412 adult outpatients; mean age 40.83yrs, 58.5% female, 41.5% male. 288 students; mean age 19.06yrs, 63.2% female, 36.8% male. 96 students, mean	FMPS and MPS-H				Developed a brief measure based on the MPS-H by conducting exploratory factor analysis on each of the subscales.	

Author/Date/Location	Participants	Measure	Internal Consistency (α)	Stability	Content Validity	Structural Validity	Criterion Validity
	age 25.07yrs, 41.7% female, 58.3% male					COSMIN Rating: Fair	
4. De Cuyper, et al., (2015), Belgium	959 students. Mean age 18.45yrs, 84.7% female, 15.3% male	MPS-H (Dutch version)	SOP 0.91 OOP 0.76 SPP 0.85 COSMIN rating: Good			Analysed the structure of the Dutch MPS-H. Concluded perfectionism is best represented by the three factor model. COSMIN Rating: Good	
5. Frost, Marten, Lahart & Rosenblate (1990), USA Study 1	410 female students	FMPS	CM 0.88 PS 0.83 PE 0.84 PC 0.84 DA 0.77 O 0.93 Total 0.90 COSMIN rating: Fair		35 items COSMIN Rating: Fair	Original development of the 6 factor structure. COSMIN Rating: Fair	

Author/Date/Location	Participants	Measure	Internal Consistency (α)	Stability	Content Validity	Structural Validity	Criterion Validity
Study 2	84 students						Significant correlations between FMPS and Burns ($r=.846^{**}$), IBT ($r=.567^{**}$) and EDI ($r=.594^{**}$). COSMIN Rating: Fair
6. Frost, Heimberg, Holt, Mattia & Neubauer (1993), USA	553 students. Mean age not reported, 51% female, 49% male	FMPS MPS-H				Significant correlations found with the BDI, $r=0.24^{**}$. COSMIN Rating: Good	Significant correlations found between the FMPS and the MPS-H, $r=0.28-0.57^{**}$. COSMIN rating : Good
7. Gelabert, et al., (2011), Spain	582 students. Mean age 21.68	FMPS (Spanish Version)	CM 0.90 PS 0.84 PE 0.85 PC 0.79 DA 0.74 O 0.91 Total 0.93 COSMIN Rating: Fair	$r=0.89$ COSMIN rating: Fair		Completed confirmatory factor analyses on the six factor FMPS, the 4 factor model (Stober, 1998) and the three factor model (Purdon et al., 1999). The comparative fit	Significant correlation found between the FMPS and the MPS-H, $r=0.75^{**}$. COSMIN Rating: Fair

Author/Date/Loc ation	Participants	MEASURE	Internal Consistency (α)	Stability	Content Validity	Structural Validity	Criterion Validity
						index suggested the six factor solution was the closest (0.87). Large significant correlations ($r = 0.59^{**}$ and $r = 0.69^{**}$) between the FMPS total scores and the scores on the EDI. COSMIN rating: Fair	
8. Harvey, Pallant & Harvey (2004), Australia	255 adults, general population. Mean age 37yrs, 55.7% female, 44.3% male	FMPS	CM 0.86 PS 0.82 PE 0.84 PC 0.82 DA 0.66 O 0.89 Total 0.91 COSMIN rating: Fair			Supports a 4 factor structure. COSMIN rating: Fair	
9. Hewitt & Flett, 1991), Canada							
Study 1	156 students. Mean age 21yrs, 66.7% female, 33.3% male	MPS-H	SOP 0.86 OOP 0.82 SPP 0.87 COSMIN Rating: Fair				

Author/Date/Location	Participants	MEASURE	Internal Consistency (α)	Stability	Content Validity	Structural Validity	Criterion Validity
Study 2	1106 students and 263 psychiatric patients (both inpatient and outpatient)	MPS-H				Concluded the 3 factor structure of the MPS-H. COSMIN rating: Fair	
10. Hewitt, Flett, Turnbull-Donovan & Mikail (1991), Canada	223 outpatients, 164 inpatients from Brockville Psychiatric hospital, 34 male spouse partners undergoing group treatment, 399 chronic pain outpatients and 199 adult general population	MPS-H		SOP 0.69 OOP 0.66 SPP 0.60 COSMIN rating: Poor			
Study 1							
11. Khawaja & Armstrong (2005), Australia	271 students. Mean age 26yrs, 75% female, 25% male	FMPS	PS 0.7 O 0.88 CMDA 0.90 PEPC 0.82 Total 0.90 COSMIN rating: Fair		Reduced items to 24 as cross loadings <0.30. COSMIN rating: Poor	Supports a 4 factor structure. COSMIN rating: Fair	r=0.98** FMPS r=0.63** PCI COSMIN rating: Fair

Author/Date/Location	Participants	MEASURE	Internal Consistency (α)	Stability	Content Validity	Structural Validity	Criterion Validity
12. Lee & Park (2011), Korea	213 students. Mean age 22.26, 47% female, 53% male	FMPS (Korean version)	CM 0.84 PS 0.81 DA 0.65 O 0.87 PHS 0.83 COSMIN rating: Good		Reduced items to 26. Factor loading >0.40, cross loading >0.30. COSMIN rating: Good	Supported a 5 factor structure. COSMIN rating: GOOD	
13. Parker & Adkins (1995), USA	278 students. Mean age not reported, 61.5% female, 38.5% male	FMPS	CM 0.90 PS 0.87 PE 0.57 PC 0.91 DA 0.72 O 0.95 Total 0.88 COSMIN rating: Fair		Found one item was misplaced; item 15 appeared to load higher on to CM than PE. COSMIN Rating: Poor	Concluded that the six factor structure of the FMPS was meaningful and relevant accounting for 71.3% of the variance. COSMIN Rating: Fair	
14. Purdon, Antony & Swinson (1999), Canada	322 patients with a DSM-IV diagnosis of either social phobia (n=102), obsessive-compulsive disorder (n=94), panic disorder (n=89), specific phobia (n=20),	FMPS			Removed 3 items from the FMPS, 1 didn't load onto a factor and 2 cross loaded. COSMIN rating: Poor	Supports a 3 factor structure. COSMIN rating: Good	

Author/Date/Location	Participants	MEASURE	Internal Consistency (α)	Stability	Content Validity	Structural Validity	Criterion Validity
	Agoraphobia (n=3), Generalised anxiety disorder (n=7) and anxiety disorder not otherwise specified (n=7). Mean age 36yrs, 49.7% female, 50.3% male						
15. Rice & Dellwo (2001), USA	119 students. Mean age 21.45yrs, 73.9% female, 26.1% male	FMPS	CM 0.91 PS 0.86 PE 0.81 PC 0.80 DA 0.85 O 0.95 COSMIN Rating: Fair	CM r=0.78 PS r=0.73 PE r=0.83 PC r=0.73 DA r=0.63 O r=0.88 Reports p values for test-retest reliability ranged from 0.001 to 0.003 but doesn't state the p value for each correlation. COSMIN Rating: Fair			
16. Stallman & Hurst (2011), Australia	6449 students, mean age 23.97, 64.6% female,	FMPS-29	CM 0.89 DA 0.76 O 0.90		Removed 6 items from the FMPS if loading <0.45.	Concluded a 5 factor solution with 29 items	

Author/Date/Location	Participants	MEASURE	Internal Consistency (α)	Stability	Content Validity	Structural Validity	Criterion Validity
	35.4% male		HS 0.79 P 0.90 COSMIN Rating: Fair		COSMIN Rating: Poor	was best fit for the data. COSMIN Rating: Fair	
17. Stober (1998), Germany	243 students. Mean age 26.3yrs, 66.3% female, 33.7% male	FMPS			Large cross loadings of items identified however no items removed so that results were comparable. COSMIN rating: Poor	Supported a four factor structure. Strong correlations found between four factors and original FMPS factors. COSMIN rating: Fair	

*P<0.05, **p<0.01, ***p<0.001

CMDA (Concern over mistakes and Doubts about actions combined into one factor), PEPC (Parental expectations and criticisms combined into one factor), HS (High Standards), PHS (Parental High Standards), P (Parenting), Burns (Burns Perfectionism Scale; Burns, 1980), IBT (Irrational Beliefs Test; Jones, 1968), EDI (Eating Disorders Inventory; Garner et al., 1983), BDI (Beck Depression Inventory; Beck, et al., 1961), PCI (Perfectionism Cognitions Inventory; Flett et al., 1998).

Reliability

Internal Consistency

Cronbach's alpha is the most widely used measurement of internal consistency (Streiner, 2003). It's the degree of within scale item inter-correlation (Boyle, 1991) meaning it tests whether the items are measuring something in common. Cronbach's alpha co-efficient ranges between 0 and 1 (Gliem & Gliem, 2003). The closer the score is to 1, the greater the internal consistency of the scale. George and Mallory (2003) suggest a score lower than 0.5 is unacceptable. Scores greater than 0.7, 0.8 and 0.9 are considered acceptable, good and excellent respectively.

Ten articles reported internal consistency of the original FMPS (7) or the MPS-H (3) (See table 1). Additionally, internal consistencies were reported for the FMPS-24 (Khawaja & Armstrong, 2005), the FMPS-26 (Lee & Park, 2011) and the FMPS-29 (Stallman & Hurst, 2011; Amaral et al., 2013). The FMPS total perfectionism score alpha co-efficients ranged from good to excellent indicating the FMPS has good internal consistency. These studies received "fair" ratings on the COSMIN however, although this was due to not reporting treatment of missing items. The subscale scores also demonstrate acceptable and above scores with the exceptions of the Doubts about Actions subscale in the Harvey et al. (2004) study ($\alpha=0.66$) and the Lee and Park (2011) study ($\alpha=0.65$) and the Parental Expectations scale ($\alpha=0.57$) in the Parker and Adkins (1995) study. This could call into question the reliability of the DA scale and whether it's an accurate measure of doubts about actions. These studies used similar sample sizes and had closer to equal numbers of male and female participants whereas other studies had large percentages of female participants. If gender differences exist within perfectionism, this would impact on the results of the studies. It's also noteworthy that Lee and Park (2011) were the only study of the FMPS which achieved a "good" rating on the COSMIN which may explain the differing result. They also altered the factor structure of the FMPS in their study, reporting that the DA subscale contained only two items, which may have impacted on the reliability score. The reduced number of items in this study is an important point to emphasise, as alpha coefficients can be inflated by a greater number of items. As the majority of studies found acceptable results for this scale, further research would be needed to draw any sound conclusions regarding this subscale. Parker and Adkins (1995) suggest the low score for PE is related to the wording of two questions within this scale which are negatively correlated with another item, they infer that deletion of one question from this subscale would increase the alpha score to 0.65; however this is still below the threshold for what is considered acceptable. This result hasn't been replicated in any later studies therefore the internal consistency of this factor can be assumed to be of an acceptable level. Both studies concerning the MPS-H show adequate to excellent internal consistency.

Stability

A measure is deemed stable if it produces similar results on individuals at different times (Streiner, 2003). Four studies reported on stability using the test-re-test approach and all but one assessed the FMPS. Rice and Dellwo (2001) reported moderate to high

significant correlations for each subscale of the FMPS and this was supported by Gelabert et al. (2011) and Amaral et al (2013) who reported significant correlations on the subscales and total perfectionism scores. These results demonstrate the FMPS has good stability across time although each study only achieved a “fair” COSMIN rating which should be considered when drawing conclusions from these results. One study found significant test-retest correlations for the MPS-H suggesting this also has stability. However with only one study, with a “poor” quality rating, further evidence is needed to conclude stability of the MPS-H.

To be deemed reliable a test needs to produce similar results consistently. Three times for the FMPS is more indicative of reliability than one study for the MPS-H but additional studies would provide further evidence. Gelabert et al. (2011) were the only study to use intraclass correlation coefficients (ICC) rather than Pearson’s r or Spearman’s ρ meaning the scores are not comparable. There has also been suggestion that Pearson’s r correlations fail to detect systematic bias and are therefore not an accurate measure of reliability (Weir, 2005).

Validity

Construct Validity

Construct validity refers to the extent to which an assessment adequately measures the construct it claims to (Nunnally & Bernstein, 1994) and the extent to which the variance in the construct is reflected in the variance in the measure (Westen & Rosenthal, 2003). Therefore, construct validity refers to how well the MPS’s assess adaptive and maladaptive perfectionism and how well the scale and subscales reflect the variance in perfectionism. This is assessed by consideration of factor structures and by comparison with other measures to explore whether the variables are associated in the way that would be expected based on the theoretical predictions (Westen & Rosenthal, 2003).

Perfectionism has been linked to depression (Shafran & Mansell, 2001). The depression subscale of the Depression, Anxiety, Stress Scale (DASS; Lovibond & Lovibond, 1995) has been positively correlated with the FMPS, $r=0.50$ (Khawaja and Armstrong, 2005). Cohen (1988) suggests that $r>0.50$ is considered a large effect size. Positive associations have also been found between the BDI (Beck Depression Inventory) and the FMPS although only small (Frost et al., 1993) and medium (Stober, 1998) effect sizes were found. The MPS-H has also been correlated with the BDI showing no relationship ($r=0$) with OOP, a very small negative relationship ($r=-0.05$) with SOP and a small but significant positive relationship with SPP ($r=.23$, $p<0.01$) (Frost et al. 1993). This is congruent with perfectionism theory as OOP relates to expecting perfection from others which is unlikely to impact on the view of the self. The SOP results are more surprising as having high expectations of the self and feeling that non-achievement is unacceptable could impact on someone’s reported affect. This study received a “good” quality rating therefore the results can be considered reasonable.

Research indicates strong relationships between social anxieties and socially prescribed perfectionism (Shafran & Mansell, 2001) however none of the papers reviewed explored the relationship between anxiety measures and the MPS-H (which includes SPP). The

FMPS total score was strongly correlated with the Anxiety subscale of the DASS, $r=0.57$, $p<0.01$ (Khawaja & Armstrong, 2005), which measures worries about performance. The FMPS subscales were not measured against the DASS subscales; this would've been interesting to see which subscales correlated giving an indication of whether the measures correlate in the expected way according to the literature.

Frost et al. (1990) and Gelabert et al. (2011) found significant correlations between the FMPS total scores and scores on the EDI (Eating Disorders Inventory; Garner et al., 1983). This supports what would be expected as eating disorders have been highlighted as having a close relationship with perfectionism (Hewitt, Flett & Ediger, 1995).

Factor structure

The original FMPS proposed a six factor structure to measuring perfectionism following an exploratory factor analysis using an all-female student sample (Frost et al. 1990). Parker and Adkins (1995) completed the same analysis using a smaller sample with male and female participants and concluded the six factor structure of the FMPS was meaningful and relevant accounting for 71.3% of the variance. Whilst both studies achieved “fair” ratings on the quality assessment, this was for the same reasons therefore the results are comparable. Despite this, the six factor solution has been called into question with other studies proposing fewer factors. This is evident in the MPS-H which identifies more items loaded onto fewer factors (Hewitt & Flett, 1991).

Frost et al. (1993) analysed all the factors of the FMPS and the MPS-H and concluded a two factor structure. *Maladaptive Emotional Concerns* included items from CM, PC, PE, DA and SPP and *positive striving* consisted of PS, O, SOP and OOP. Frost et al. (1993) argue that these two factors accurately measure the dimensions of perfectionism and the quality of the assessment of construct validity was “good”, however an all student sample may mean the results are not generalizable. It's expected that students would show “positive striving” and this isn't necessarily reflective of the population as a whole or a specific clinical population who may be at risk of psychological distress. A two factor solution hasn't been replicated in any other studies.

Purdon, Antony and Swindon (1999) found support for a three factor solution, accounting for 51.53% of the variance; however this wasn't the same as the MPS-H factors. Factor one included items from CM, DA and one item from PS which they labelled *fear of mistakes*. The second factor, *Goal/Achievement Orientation*, included all of O plus five items from PS. The final factor, *perceived parental pressure*, incorporated all of PE and PC. These factors correlated with the MPS-H subscales of SOP ($r=.65$), OOP ($r=.46$) and SPP ($r=.71$).

Adding further confusion, Stober (1998) argued for a four factor structure concluding three core scales (CMDA, PEPC and PS) with a related scale (O) would demonstrate a more valid measure of perfectionism. Identical factors were highlighted by Amaral, et al., (2103) and Khawaja & Armstrong (2005), who found the four factors accounted for 56.79% of the variance. Harvey, et al. (2004) also support a four factor solution although named the factors *Negative projections*, which incorporated items from PS and DA, *Achievement expectations* (predominantly PS), *Parental influences* (PE and PC) and *Organisation* which was exact with the original O. This was due to the ordering of the

item loadings which they felt was more appropriate to the measurement of perfectionism and the new titles more accurately represented what was measured in each subscale. Despite agreeing on four factors, each study loaded items onto these factors in different ways meaning it's still not an agreed solution.

Five factor structures have also been proposed (Stallman & Hurst, 2011; Lee & Park, 2011) although these again are not consistent in the item loadings within the factors.

Gelabert et al. (2011) suggested that neither the six, four or three factor structures were a good fit but that the six factor solution was the closest (0.87). If none of the factor structures were deemed to be a good fit to the data, it's reasonable to question whether the MPS's are in fact measuring the construct of perfectionism. Further consideration of the factor structure of the MPS is required in order to ascertain whether the construct of perfectionism is being measured adequately.

The research indicates PE and PC are measuring the same factor related to parenting, with five studies (Stober, 1998; Purdon et al. 1999; Harvey et al., 2004; Khawaja & Armstrong, 2005, Amaral et al., 2013) including these as one factor rather than two. Four studies (Purdon, et al., 1999; Harvey et al., 2004; Khawaja and Armstrong, 2005; Amaral et al., 2013) suggest that CM and DA could be combined.

When conducting factor analysis, many of the authors removed items from the FMPS and MPS-H as they felt they were not representative of the construct being measured. Such considerable disagreement between established researchers calls the validity of the MPS's can in to question.

Content Validity

Content validity is a part of construct validity which assesses whether the items of a measure are representative of the construct being measured (Haynes et al., 1995). For example, do the questions (items) in the Concern over Mistakes subscale address concerns about mistakes? It's also important to assess whether the items within the MPS's are representative of perfectionism as a construct.

Six studies noted high cross loadings or no cross loading of items within their results. Stober (1998) argues that the problem may be with the individual items suggesting that perhaps the items are attempting to reflect more than one dimension of perfectionism and thus need to be more independent to elicit the required responses. Some of the studies retained items despite difficulties with the loadings where others removed them. Interestingly it's not the same items being removed from each study suggesting there is no consensus of items that do not load to a factor or cross load on multiple factors. Item 6 and 17 of the original FMPS have been removed the most often due to cross loading.

Quality assessment has highlighted "poor" ratings for most of the assessments of content validity. This is because studies didn't report completing assessments of whether the items were relevant to the study population or the inclusion of contradictory information. For example, Khawaja and Armstrong (2005) refer to the removal of 9 items however they title their version of the scale the FMPS-24 suggesting that 11 items are missing. There is no discussion regarding this within the article however examination of the data

suggests that 11 items cross loaded greater than 0.30. It's difficult to consider the results of these studies as valid when the information provided is incomplete.

Criterion validity

Criterion validity is assessed by examining the extent to which a measure will correlate with another measure assessing the same criteria (Coolican, 1990). Table 1 illustrates the correlations between the FMPS, the MPS-H and other perfectionism measures highlighting small to large effect sizes. Only five studies examined these relationships. More research in this area would further support the criterion validity of the FMPS.

The subscales of the FMPS and the MPS-H have been significantly correlated (table 2) providing more evidence for the concurrent validity of these scales.

Table 2. Correlations between the subscales of the FMPS and the MPS-H

Study	FMPS	MPS-H		
		SOP	OOP	SPP
De Cuyper et al., 2015	CM	.64***	.36***	0.59***
	PS	.76***	.37***	.39***
	PE	.25***	.29***	.55***
	PC	.21***	.20***	.53***
	DA	.46***	.15***	.45***
	O	.42***	.16***	.8*
Frost et al. (1993)	CM	0.38**	0.22**	0.49**
	PS	0.62**	0.33**	0.16**
	PE	.24**	.19**	.49**
	PC	0.07	0.1	.49**
	DA	.16**	0.01	.28**
	O	.29**	0.07	0.01

*p<0.05, **p<0.01, ***p<0.001

The FMPS demonstrates criterion validity. However, the MPS-H hasn't been associated with any other measures of perfectionism therefore it's difficult to conclude that the MPS-H has criterion validity.

Limitations

Most of the studies reviewed received less than "good" quality ratings for their assessments of reliability and validity. This is important when interpreting the conclusions drawn from these studies. Furthermore, considering the potential dimensions of perfectionism, it's necessary to consider the role of social desirability in the responses

provided by participants and the impact of this on the results. Self-report measures are always at risk of bias (Coolican, 1999).

The results of this review are limited by the potential introduction of bias. All study selection, data extraction and interpretation was completed by a single author whereas systematic reviews are often completed by a team in order to limit bias (Higgins & Green, 2008). The exclusion of texts in different languages also limits the results as the search identified texts which may have been relevant but were not available in English. Therefore the review hasn't completed a comprehensive evaluation of all the available data. Additionally, the large number of results in the initial search suggests the focus could have been tighter. Despite these limitations, conclusions can be drawn from the studies reviewed.

Conclusions

The main aim of this review was to examine the psychometric properties of the FMPS and the MPS-H. Perfectionism research is growing and the strong associations found between perfectionism and psychopathology mean that a reliable and valid test of this distinctive personality trait's essential for ensuring appropriate interventions can be developed and evaluated.

The studies suggest that internal consistency of the FMPS and MPS-H are good and comparable with neither scale showing as superior. The questions raised around the DA and PE subscale in the FMPS, whilst only demonstrated in limited studies, do suggest that more research may be needed to further quantify the reliability of those particular subscales.

In terms of supporting reliability through test-re-test scores, there is little data from which to draw conclusions. Future research into the psychometrics properties of these scales should consider testing at different time points to further support the reliability of these measures.

Some evidence was found for construct validity although too few studies reported associations between the MPS-H and other measures for any reliable conclusions to be drawn. The FMPS shows associations with the relevant measures of affect as would be expected however these results are based on total perfectionism scores. The considerable debate regarding the subscales of the FMPS have an impact on the construct validity of this measure. The results indicate the presence of multi-dimensions of perfectionism but there is no consensus on the number of factors that is relevant and reflective of perfectionism as a construct. It's therefore difficult to determine whether the MPS's are representative of the underlying constructs of perfectionism. This in turn appears to limit the content validity of the measures as factor loadings were inconsistent across the studies. It could be argued that a consensus needs to be made regarding the factor structure of perfectionism before considerations of content validity can be assessed however even the studies with similar factor structures yielded different factor loadings.

Positive significant correlations between the FMPS and other measures of perfectionism as well as strong correlations between the subscales of the FMPS and the MPS-H

demonstrate good criterion validity for this measure. There wasn't enough data available regarding associations between the MPS-H and other perfectionism measures therefore this cannot be concluded to have good criterion validity without further assessment.

Overall it appears that the FMPS shows good reliability and criterion validity. The MPS-H also has good reliability. From the studies reviewed, it cannot be concluded that the MPS-H is a valid assessment of perfectionism as not enough data was available regarding this measure. The FMPS's validity is also questioned due to the lack of consensus regarding both item loadings and factor structure. Most of the studies utilised student samples therefore the results cannot be generalised to other populations. This review was conducted with the notion of clinical perfectionism in mind therefore further research should be conducted on clinical samples. Further exploration of these areas is needed to develop a measure of multi-dimensional perfectionism which is valid as well as reliable.

Future research into perfectionism should seek to provide a clearer understanding of the construct to enable development of a valid measurement tool. Clarification of the most meaningful factor solution and item content would enable a better understanding of the construct of perfectionism and the most reliable and valid measurement of this. Additionally, utilisation of clinical samples would be helpful to consider generalisation of the results.

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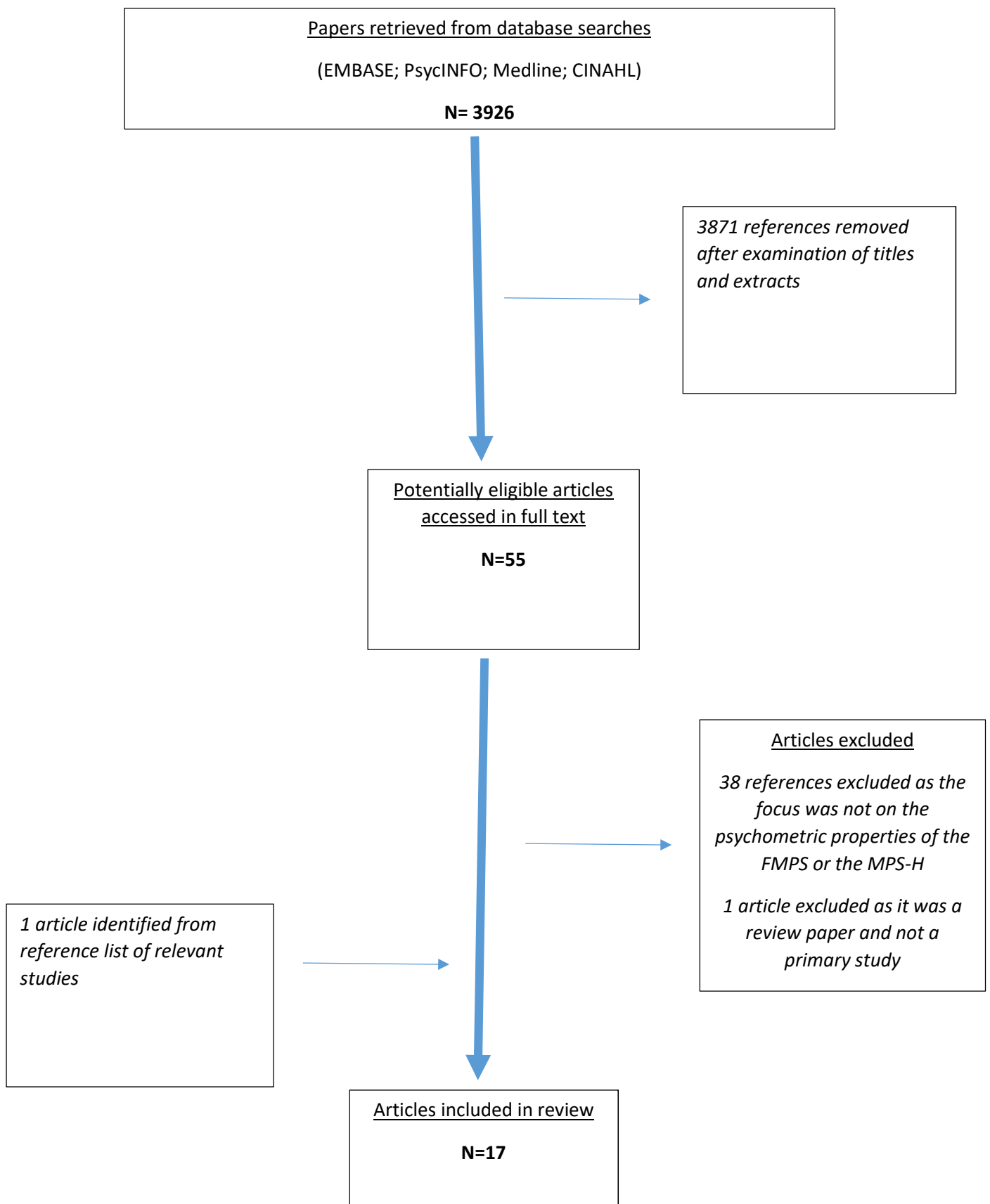
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Appendix A

QUOROM diagram outlining the selection process



Journal Article

ACTing on Perfectionism

A single case experimental design examining the effect of acceptance and commitment therapy on multi-dimensional perfectionism

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Abstract

Perfectionism is a personality construct argued to be widespread with the potential for incapacitation (Pacht, 1984). It has been linked with a host of psychological difficulties impacting on social and occupational problems as well as physical and mental health. Perfectionism is considered transdiagnostic and targeting this construct is suggested to lead to symptom reduction across a range of other difficulties (Howell, et al., 2016). Cognitive Behavioural Therapies are the current focus of interventions for perfectionism. This study conceptualised perfectionism from an Acceptance and Commitment Therapy (ACT) perspective and aimed to investigate whether ACT would be a viable treatment for perfectionism.

A multiple single case design was employed to examine the effect of a guided self help ACT intervention on perfectionism using self report and behavioural tasks as outcome measures. The effect of specific ACT processes was examined. The sample consisted of five female participants.

Results were inconsistent across participants but some replication of effect was found for improved psychological flexibility, perfectionism and distress. The findings indicate that a guided self help ACT intervention could be an effective treatment for perfectionism, as decreased perfectionism and decreased self

² Please see <https://www.elsevier.com/journals/journal-of-contextual-behavioral-science/2212-1447/guide-for-authors> for the guide for authors

reported distress were found following the intervention. Further research is warranted to examine the impact of this intervention further.

Keywords: perfectionism, treatment, intervention, acceptance and commitment therapy, single case design

Introduction

Perfectionism

Perfectionism has been conceptualised as a construct within personality (Bieling, Israeli & Antony, 2004) related to expectations and evaluations of the self and others (Burns, 1980). It is characterised by the setting of high standards and self criticism (Amarel, et al., 2013). Perfectionism is widespread (Pacht, 1984) and researchers debate the dimensions within this construct which negatively impact an individual. It is widely accepted that there are multiple dimensions to perfectionism, some of which are considered adaptive and some considered to be maladaptive.

[See extended paper section 1.1 and 1.2 for further discussion on the construct and development of perfectionism]

Maladaptive perfectionism has been associated with psychological distress with studies highlighting links between perfectionism and rumination (Flett, Madorsky, Hewitt & Heisel, 2002), depression (Hewitt, Flett, & Ediger, 1996), suicidality (Hamilton & Schweitzer, 2000) and anxiety disorders (Egan, Wade & Shafran, 2011).

[See extended paper section 1.3 for further discussion on the links between perfectionism and psychopathology]

Perfectionism itself is difficult to fully conceptualise due to the heterogeneity of its presentation (Rasmussen & Troilo, 2016). Whilst a gold standard definition of perfectionism has not been achieved there is consensus amongst researchers regarding some of the key characteristics.

Early theorists considered the importance of holding high personal standards coupled with critical evaluation tendencies (Hamachek, 1978) and this notion has been upheld throughout the development of perfectionism research. Holding high standards alone is not considered maladaptive and has been shown to promote competence and success but when accompanied by overly critical evaluations can be a source of distress (Frost, Marten, Lahart, & Rosenblate, 1990). The tendency to critically evaluate against personal standards is a key feature of maladaptive perfectionism (Frost, et al., 1990).

Perfectionists react negatively to mistakes and hold the belief that failure will lead to loss of respect by others (Frost, et al., 1995; Frost et al., 1997).

Perfectionists tend to appraise small errors as total failure; which has been likened to the dichotomous thinking styles described by Beck (1979) in relation to depression (Burns, 1980). Perfectionistic concern over mistakes has been correlated with rumination (Frost & Henderson, 1991; Frost, et al., 1997), measures of negative affect (Frost, Heimberg, Holt, Mattia & Neubauer, 1993; Frost, et al., 1995; Frost, et al., 1997), social phobia (Juster, et al., 1996) and depression (Enns & Cox, 1999), demonstrating the relationship between perfectionism and psychological distress. Perfectionists also tend to doubt whether their actions have been completed satisfactorily (Burns, 1980; Hamachek, 1978). This is considered akin to the difficulties experienced by those diagnosed with obsessive compulsive disorder (OCD) who experience uncertainty regarding whether a task is complete (Reed, 1985). This doubt about actions correlates highly with the physiological and cognitive responses associated with anxiety and symptoms of social phobia (Juster, et al., 1996). Extant perfectionism research indicates that concern over mistakes, doubts about actions and personal standards are the maladaptive domains of perfectionism most closely associated with distress.

[See extended paper section 1.1.2 for further discussion on the domains of multi-dimensional perfectionism]

Perfectionism has been found to impede treatment for other disorders (Blatt, Quinlan, Pilkonis & Shea, 1995; Chik, Whittal & O'Neil, 2008; Sutander-Pinnock, Woodside, Carter, Olmsted & Kaplan, 2003) and evidence implies that targeting perfectionism can lead to symptom reduction for numerous psychiatric disorders (Bieling, Israeli & Antony, 2004; Shafran, Cooper & Fairburn, 2002).

[See extended paper section 1.3.4 for further discussion on the impact of perfectionism on treatment outcomes]

Despite the growing body of evidence that perfectionism is detrimental to psychological wellbeing, there has been little investigation into treatment for perfectionism. A cognitive behavioural model of clinical perfectionism was developed and revised by Shafran, Cooper and Fairburn (2002, 2010) with the

intention of advancing treatment for perfectionism for use in routine clinical practice (figure 1).

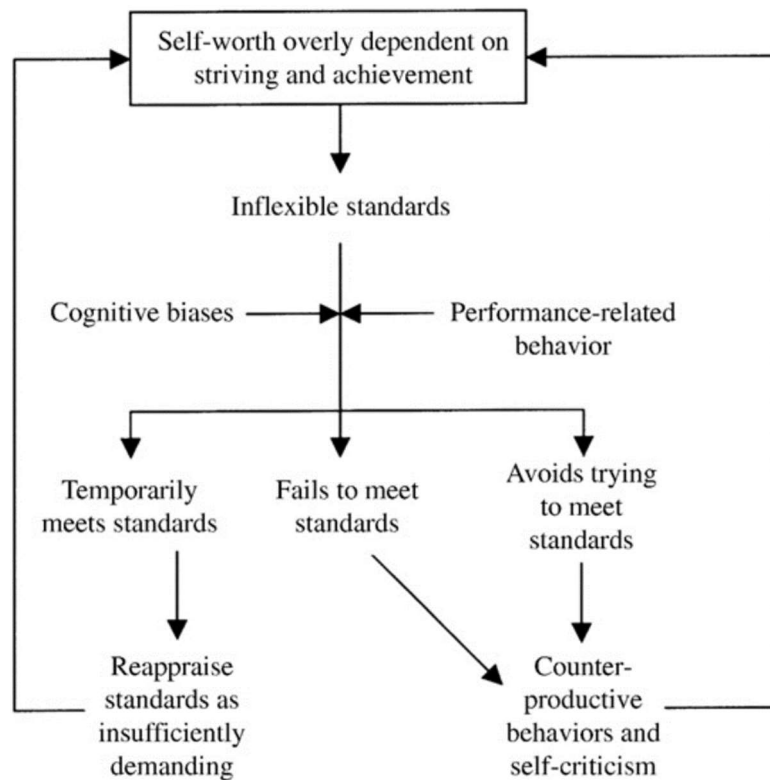


Figure 1: Revised Cognitive Behavioural Model of Clinical Perfectionism (Shafran et al., 2010)

The important role of cognition is highlighted in the model whereby perfectionists set standards operationalised by “should” and “must” rules leading to behaviours designed to prevent failure; such as repeated checking, procrastination, avoidance and thoroughness. Cognitive biases then impact on the appraisal of whether the perfectionist has met the standard; often leading to a perception of failure accompanied by a negative emotional response. This results in self criticism and development of further perfectionistic and counterproductive behaviours such as procrastination or excessive checking (Shafran, et al., 2002). Studies have found support for the role of cognitive biases and associated behaviours (e.g., checking) in the maintenance of perfectionism (Egan, Piek, Dyck & Rees, 2007; Koboroi & Tanno, 2012; Yiend, Savulich, Coughtrey & Shafran, 2011).

Cognitive Behavioural Therapy (CBT) for perfectionism targets the cognitive processes (attention to failure at the expense of success, dichotomous thinking, discounting success) and subsequent emotional and behavioural responses (anxiety, low mood, self criticism, procrastination, excessive checking) that maintain perfectionism (Shafran, Coughtrey & Kothari, 2016).

Efficacy studies for CBT for perfectionism are in their infancy but preliminary findings appear positive. Clinically significant improvements in perfectionism and reductions in symptoms of depression have been found in single case research (Glover, Brown, Fairburn & Shafran, 2007) and in a small randomised controlled trial (Riley, Lee, Cooper, Fairburn & Shafran, 2007). A systematic review and meta-analysis examining studies using CBT to target perfectionism found short interventions with adults led to significant reductions in perfectionism (Lloyd, Schmidt, Khondoker & Tchanturia, 2015). Large effect sizes were also found in reductions from pre-treatment to post-treatment on concern over mistakes and personal standards (Lloyd, et al., 2015). These studies support the theory that cognitive and behavioural processes play a key role in the maintenance of perfectionism and that targeting these enables positive change for individuals.

[See extended paper section 1.4 for further discussion on treatment of perfectionism]

The cognitive behavioural model, however, has been criticised for being too simplistic, assuming perfectionism to be unidimensional and failing to address key ideas from the perfectionism literature (see Hewitt, Flett, Besser, Sherry & McGee, 2003).

The facets of perfectionism are varied meaning it is difficult to incorporate all the potential contributors into one model. We have considered an alternative approach to conceptualising perfectionism by considering processes which contribute to psychological inflexibility according to the acceptance and commitment therapy model proposed by Hayes and colleagues.

Acceptance and Commitment Therapy

Acceptance and Commitment Therapy (ACT) is a contextual behavioural approach to addressing human distress. The primary goal of ACT is to increase psychological flexibility; the ability to experience private events (thoughts, sensations, memories) as they are, and to engage in value directed behaviour (Hayes, Strosahl, & Wilson, 2012). The ACT model is underpinned by relational frame theory (RFT; Hayes, Barnes-Holmes & Roche, 2001), a behavioural theory of language and cognition developed as part of the contextual behavioural science movement (Hayes & Lillis, 2012). A key concept within RFT is that distress occurs when an individual is unable to differentiate between the process of thinking and the product of thinking (Fletcher & Hayes, 2005). That is, the difference between having a thought and buying into a thought (Hayes & Smith, 2005). The process of becoming attached to or fused with thoughts is termed 'cognitive fusion'.

[See extended paper section 1.6 for more discussion of ACT and RFT]

ACT considers psychological inflexibility to be at the core of human distress (Hayes, et al., 2012). This inflexibility is impacted by six intertwined core processes (see figure 2). ACT uses acceptance and cognitive defusion as a means of accepting unwelcome private events and changing the function of these for the individual (Hayes, 2004).

[See extended paper section 1.6.5 for further discussion of the ACT processes]

The ACT model highlights how verbal/cognitive rules impact on behaviour (Hayes & Lillis, 2012). In perfectionism, the "shoulds" and "musts" become regulators of behaviour leading to procrastination, checking and other perfectionistic behaviours (Shafran, et al., 2002). Within the ACT model, it is not the thoughts or cognitive rules themselves which cause difficulties but the lack of distance between the person and judgements and predictions within the thoughts (Hayes & Lillis, 2012). Unlike traditional CBT, the aim is not to change the thoughts, but to change how the individual interacts with the thoughts so they can be experienced as an ongoing element of being human (Hayes & Lillis, 2012).

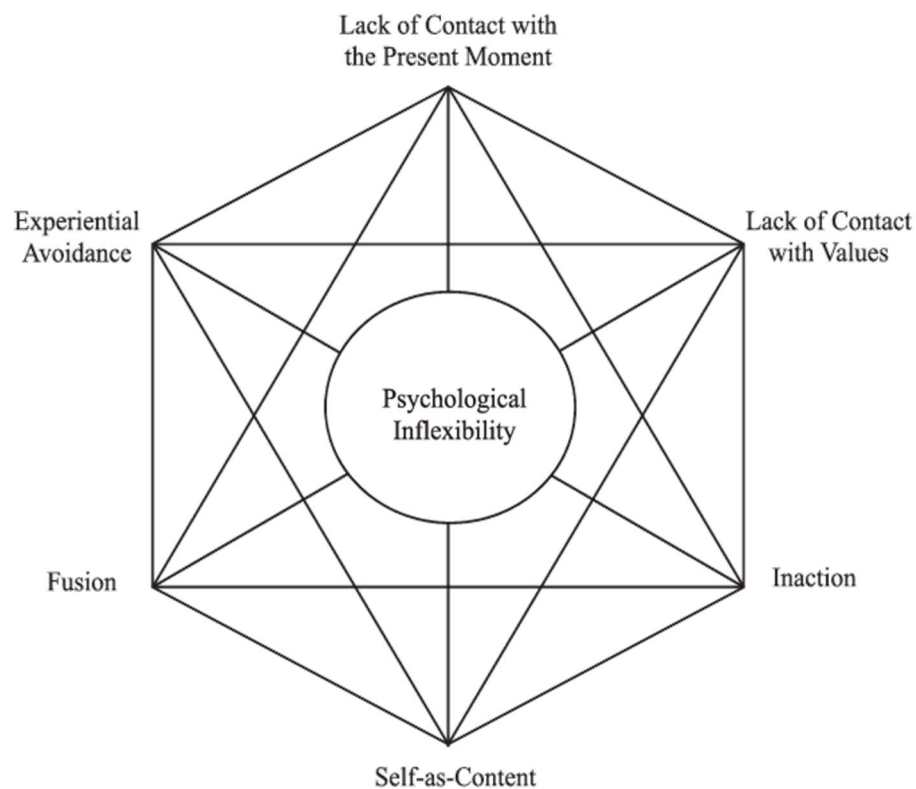


Figure 2. Hexaflex showing the processes which lead to psychological inflexibility (Hayes, et al., 2012).

Perfectionists tendency to critically appraise themselves negatively and to magnify errors in the absence of a negative life event (Macedo, Marques & Pereira, 2014) is in line with the ACT notion that distress occurs when an individual becomes fused with their thoughts rather than experiencing it as part of one's history being illuminated by the current context (Hayes, et al., 1999). Defusion methods, placing distance between the private event and the person, can alleviate the distress caused by unpleasant private events (Hayes & Lillis, 2012). Flexible attention to the present moment supports defusion. An individual's history and experience contributes to psychological flexibility and by noticing and acknowledging unpleasant thoughts but then shifting attention to more important events in the present, contributes to building a future containing less moments of entanglement with distressing thoughts; resulting in a reduction of the dominance of that thought on future behaviour (Hayes & Lillis, 2012).

Experiential avoidance occurs when an individual attempts to avoid, suppress or escape from unwanted private events. Procrastination and excessive checking behaviours are examples of this. Experiential avoidance is effective in the short term as it leads to an immediate reduction in distress however, it has been shown to be problematic in the long term (Hayes, Luoma, Bond, Masuda & Lillis, 2006). Suppression of unwanted experiences can create maladaptive behavioural cycles which could increase the likelihood of psychopathological symptoms (Wenzlaff and Wegner, 2000). In ACT, acceptance is developed as an alternative to control strategies whereby individuals are taught to notice experiences as they occur and accept them without defence; altering the function of the event and subsequent impact of the experience (Hayes, et al., 2012).

Values and commitment are a key process for enhancing psychological flexibility. ACT encourages behaviour change which is in line with individual values. As research demonstrates that striving behaviour alone is not maladaptive, working on values and commitment to value based behaviour would enable perfectionists to continue to work towards achievement despite cognitive content regarding failure.

[See extended paper section 1.6.6 for further discussion around ACT and perfectionism]

The evidence base for ACT as an intervention for psychological health is growing rapidly (Cavanagh, Strauss, Forder & Jones, 2014) with studies reporting that greater psychological flexibility is related to a lower probability of suffering psychological distress (Hayes, et al., 2006). This suggests that by increasing psychological flexibility – the anti-thesis of perfectionism – ACT may be beneficial for treatment of perfectionism.

Research has found ACT can produce better outcomes (Ruiz, 2012), is equivalent in quality and is more efficacious in measurement of processes of change than CBT (Gaudiano, 2009). Additionally, studies have shown ACT has been beneficial where clients have previously engaged in CBT without experiencing improvement. These studies concluded that ACT may be a second line approach for clients who have not benefitted from other first line

psychotherapies (Clarke et al., 2014). When ACT and CBT have been shown to be as effective as one another on immediate outcome measures, ACT has also shown an “incubation effect” whereby improvement is maintained after treatment has ceased (Clarke et al., 2014). This is important in the context of public health services. By increasing long term treatment effects, the number of patients returning to use healthcare services in the future may be reduced.

[See extended paper section 1.6.7 and 1.6.8 for further discussion of the efficacy of ACT interventions and a critique of the ACT model]

Given the transdiagnostic nature of perfectionism and the dominance of cognitive rules and avoidant behaviours in perfectionists, we theorised that ACT may offer a viable, cost effective alternative to CBT due to its focus on acceptance, defusion and commitment to values based behaviours. We therefore aimed to examine the effect of an ACT intervention on perfectionism and to examine the potential mechanisms of change among the specific ACT processes. Given the current climate of public health and the development of stepped care approaches, there is increasing interest in the efficacy of self help resources (Shafran, et al., 2016). Guided self help using CBT has been demonstrated to be effective for targeting perfectionism (Pleva & Wade, 2007; Steele & Wade, 2008) and research has supported the delivery of ACT in a self help format (Cavanagh, Strauss, Forder & Jones, 2014); therefore, a guided self help ACT intervention was utilised within this study.

[See extended paper section 1.7 for further discussion of the effectiveness of self help interventions]

Aims and purpose

The aim of the study was to examine the effect of a guided self help ACT intervention on multidimensional perfectionism and distress using a multiple baseline single case experimental design. Outcome measures included self report questionnaires and tasks observing behaviour change. The study aimed to examine how individual ACT processes relate to perfectionism and overt perfectionistic behaviours. Previous research has shown that individuals who

score highly on measures of perfectionism take longer to complete tasks due to an increased concern over the accuracy of their performance, rather than with the time taken to complete the task (Stoeber, Chesterman & Tarn, 2010; Stoeber & Eyesenk, 2008). Based on these previous findings, we hypothesised that the self help ACT intervention would lead to a reduction in time taken to complete the behavioural tasks.

Clinical Relevance

An examination of how the ACT processes impact on perfectionism and associated distress would contribute to the understanding of perfectionism and enable exploration of effective treatment strategies for this construct. This study employed a single case experimental design (SCED) to examine the ACT processes in a standardised manner, across multiple cases, to enable investigation of the processes of change on an individual level and to explore possible mechanisms of change in ACT for perfectionism. If self help ACT interventions are effective, this would support their use as widely accessible and cost effective interventions. As perfectionism is considered a maintenance factor for numerous psychopathologies, effective treatment for this construct is hypothesised to lead to reductions in psychopathological symptoms across a range of disorders (Howell, et al., 2016).

[See extended paper section 1.8 for further explanation of clinical relevance]

Method

Design

A non-concurrent multiple base line single case experimental design (SCED) was employed. Multiple base line designs enable the examination of target behaviours through simultaneous measurement (Barlow & Hersen, 1984); allowing for tracking of the mechanisms across time and enabling examination of the impact of the ACT intervention on psychological flexibility, perfectionism and distress across the study period. This design allowed the hypotheses to be

tested and replicated multiple times supporting the external validity of the study (Rassafiani & Sahaf, 2010).

[See extended paper section 2.1 for further discussion of SCED research and 2.2 for epistemology]

Population and recruitment

Participants were recruited through poster advertisement at the University of Lincoln and via social media. Advertisement was aimed at recruiting individuals who felt perfectionism was having a detrimental impact on their lives.

Interested participants were directed to an online screening tool where they were directed to the study information sheet and asked to tick a box indicating informed consent. Following this, prospective participants completed the screening tool to ensure they satisfied the inclusion criteria.

The screening tool was accessed by 63 participants over a three month period, of those 63, 38 declined consent or did not complete the screen. 19 of the remaining 25 prospective participants met the inclusion criteria and were contacted sequentially according to FMPS score (Highest first) until a sample size of five was achieved. Five participants did not respond to contact from the researcher and six declined to complete the study following contact from the researcher. The final sample consisted of five female participants.

Inclusion and exclusion criteria

Participants accessing other psychotherapeutic interventions were excluded from the study. Participants were required to:

- Be 18 years or older
- Be able to speak, read and comprehend English
- Report perfectionism as problematic
- Score ≥ 75 on the Frost multidimensional perfectionism scale (FMPS; Frost et al., 1990 – see measures section) to indicate high levels of perfectionism.

[See extended paper 2.3 for further discussion on the inclusion/exclusion criteria]

Measures

The study involved administration of daily and weekly measures of psychological flexibility, perfectionism and distress (see Table 3 for weekly measures). Additionally, behaviour change tasks were completed pre- and post-intervention and at a 6 week follow up.

Daily Measure:

The daily measure consisted of 15 questions selected from the Comprehensive Assessment of Acceptance and Commitment Therapy Processes (**CompACT**; Francis, Dawson, & Golijani-Moghaddam, 2016) (8), the Multi-dimensional Perfectionism Scale (**FMPS**; Frost, Marten, Lahart and Rosenblate, 1990) (3), the Depression Anxiety and Stress Scale (**DASS-21**; Lovibond & Lovibond, 1995) (3) and the The Acceptance and Action Questionnaire II (**AAQ-II**; Bond, Hayes, Baer, Carpenter, Guenole, Orcutt, Waltz, & Zettle, 2011) (1). This was completed throughout the baseline phase and the intervention phase of the study.

Proof reading task:

Proof reading tasks have been used in previous literature to examine the impact of perfectionism on performance and efficiency (Stoeber & Eyesenck, 2008; Stoeber, 2011). Perfectionism has been shown to reduce efficiency due to individuals with high standards finding faults incorrectly (Stoeber & Eyesenck, 2008). This could relate to the perfectionist's concern over mistakes or doubts about their actions when completing such a task; meaning that they take more time and find more false errors than those with lower perfectionistic standards. Therefore, a reduction in perfectionism may lead to greater efficiency in task performance. ACT interventions aim to bring behaviour in line with one's personal values (Hayes, et al., 2012); a change in overt perfectionistic behaviour, such as on the proof reading task, demonstrates associations

between the self help ACT intervention, psychological flexibility and perfectionism.

Participants were presented with a written extract to proof read, taken directly from Stoeber and Eysenck (2008) with the author's permission. The task required participants to find three types of errors: spelling, grammar and APA format errors. The time taken to complete this task was recorded pre-intervention, post-intervention and at six week follow up.

Bead Sorting tasks:

Previous research (Bouchard, Rheaume, & Ladouceur, 1999; Yiend, et al., 2011) has used bead sorting tasks to examine checking behaviours and the tendency to jump to conclusions in perfectionists. In the first task, participants were presented with coloured beads and asked to classify them into bottles as quickly and accurately as possible. After a minute, participants were offered the option to check for mistakes. Time taken to complete the task was recorded. Participants with high levels of perfectionism have been found to take longer with this task as they spend more time checking for mistakes (Yiend, et al., 2011). Therefore, a reduction in time taken on this task provided support for inferences made regarding the effectiveness of the intervention within this study.

In the second bead task participants were presented with a bag containing 100 beads and told it contained either 30 black beads and 70 white beads or 30 white beads and 70 black beads. Participants removed one bead at a time from the bag, removing as many as they felt necessary to confidently decide which ratio of beads was contained within the bag. Total number of beads taken from the bag was recorded. Yiend, et al. (2011) found those higher in perfectionism removed more beads before making a decision than those lower in perfectionism. A reduction in the number of beads taken to draw a conclusion demonstrated changes in the overt perfectionistic behaviour and supported inferences regarding the efficacy of the intervention.

Change Interview:

A change interview (Elliott, 2010) was completed at the follow up by an independent researcher blind to participants scores. This examined participant's views of the intervention and any perceived change from participation in the study. It also explored whether participants attributed any change to participation in the study.

[See extended paper section 2.5 for more information regarding outcome measures used]

Table 3

Characteristics and Psychometric Properties of the Weekly Measures

Measure	Construct	No. Items	Example item	Scale direction	Internal consistency*
Comprehensive Assessment of Acceptance and Commitment Therapy Processes (CompACT ; Francis, Dawson, & Golijani-Moghaddam, 2016)	Psychological flexibility	23	<i>"I tell myself that I shouldn't have certain thoughts"</i>	0 (Strongly disagree) – 6 (Strongly Agree) High score = Greater psychological flexibility	.91
The Acceptance and Action Questionnaire II (AAQ-II ; Bond, Hayes, Baer, Carpenter, Guenole, Orcutt, Waltz, & Zettle, 2011)	Psychological inflexibility	7	<i>"Worries get in the way of my success"</i>	1 (Never true) – 7 (always true) High score = greater psychological inflexibility	.84
Depression Anxiety and Stress Scale (DASS-21 ; Lovibond & Lovibond, 1995)	Depression Anxiety Stress	21	<i>"I find it hard to wind down"</i>	0 (Did not apply to me at all) – 3 (Applied to me very much, or most of the time) High score = higher level of distress	.93
Multi-dimensional Perfectionism Scale (FMPS ; Frost, Marten, Lahart and Rosenblate, 1990)	Multi-dimensional perfectionism	35	<i>"I should be upset if I make a mistake"</i>	1 (Strongly disagree) – 5 (strongly agree) High score = higher level of perfectionism	.90

* Cronbach's Alpha coefficient

Procedure

The five participants met with the lead researcher to complete the test battery and behaviour change tasks. Following completion of these measures, participants entered the 'baseline' phase of the study. During the baseline phase, participants completed the daily measure. This phase was conducted until a stable or declining trend could be identified; this baseline acted as each participant's control phase (Barlow & Hersen, 1984). Once a stable baseline was indicated, participants began the intervention phase of the study. Each participant began by reading the introductory chapters of the ACT self help workbook 'Get out of your mind and into your life' (Hayes & Smith, 2005). The remaining chapters were divided into sections pertaining to each of the ACT processes and were provided to participants sequentially (see table 4).

[See extended paper 2.6 for discussion of the self help material]

Participants received daily text reminders to complete the work book and daily measure alongside a weekly telephone call for support. On completion of the work book, participants completed the test battery again. This was repeated at a six week follow up. At the follow up, participants also completed the change interview (Elliot, 2010).

Table 4

Chapters provided to participants per week

Week participant completed the chapter/s	ACT process	Chapters	Chapter title/s
1	Overview of ACT	Introduction, 1, 2	Introduction; Human suffering; Why language leads to suffering
2	Acceptance	3,4,9,10	The pull of avoidance; letting go; What willingness is and is not; Willingness; Learning to Jump
3	Cognitive Defusion	5,6	The trouble with Thoughts; Having a thought vs. Buying a thought
4	Self as context	7	If I'm not my thoughts, then who am I?
5	Present-moment awareness	8	Mindfulness
6	Values	11,12	What are values? Choosing your values
7	Committed action	13	Committing to Doing it.

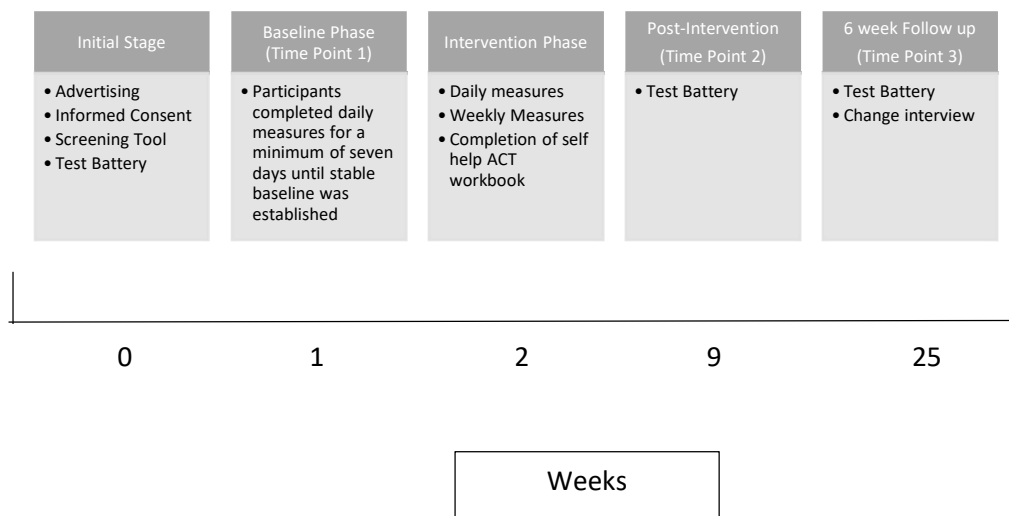


Figure 3. Overview of the SCED procedure

[See extended paper section 2.7 for further discussion regarding the study procedure]

Analysis

To examine the impact of the intervention on psychological flexibility, perfectionism and distress, participants scores on the daily and weekly measures were graphed and subject to visual analysis. Visual analysis is considered the benchmark for examining the effect of an intervention in SCED studies (Kennedy, 2005). The time series data was subject to examination with consideration of trend, variability, central tendency, point of change and overlap (Morley, 2015). This allowed exploration of when and where changes occurred in the ACT processes during the intervention period to demonstrate the active components of the intervention. The Percentage Exceeding the Median (PEM; Ma, 2006) method was used to calculate treatment effects. Results from the weekly measures were subject to assessment of reliable and clinically significant change (Jacobson and Truax, 1991).

[See extended paper section 2.8 for discussion regarding RCI and CSC analysis]

Change interview responses were considered alongside the quantitative data to enable consideration of the inferences made from the data regarding the effectiveness of the intervention and possible mediation factors.

Results

Five participants took part in the study. Table 5 displays the demographics of the sample alongside the results from the screening measure for each participant.

None of the participants were receiving any current psychotherapeutic interventions for perfectionism or any other psychological difficulties.

Table 5

Sample demographics and screening scores

P	A	Gender	Ethnicity	Occupation	Level of education	FMPS total	CM Score	PS Score	DA Score	PE Score	PC Score	O Score
P1	19	F	White British	Undergraduate student	College/sixth form	97	38	21	16	9	13	16
P2	55	F	White British	Employed	Undergraduate degree	93	32	30	15	12	4	30
P3	39	F	White British	Employed	Undergraduate degree	106	31	25	14	21	15	30
P4	20	F	White British	Undergraduate student	College/sixth form	116	40	33	16	19	8	25
P5	30	F	White British	Undergraduate student	College/sixth form	87	40	21	17	5	4	25

*P (Participant); A (Age), F (Female), CM Score (Concern over mistakes subscale score at screen), PS Score (Personal standards subscale score at screen), DA Score (Doubts about actions subscale score at screen), PE Score (Parental expectations subscale score at screen), PC Score (Parental criticism subscale score at screen), O (Organisation subscale score at screen)

Psychological flexibility

Consideration of the RCI (reliable change index) and CSC (clinically significant change) (see figure 4) demonstrated the intervention had little effect on psychological flexibility as measured by the compACT, with only participant three (P3) demonstrating a reliable change in scores from pre-intervention. However, decreased scores on the AAQ-II demonstrated increases in psychological flexibility for four participants. Participant four (P4) had a reliable increase in score on the AAQ-II suggesting an increase in psychological inflexibility. This participant also had an increased score on the compACT (although this was not reliable). Triangulation of this data with the qualitative data from the weekly phone calls and the change interview indicates that P4 demonstrated minimal engagement in the self help material over the intervention period and did not recognise any changes in behaviours or life across the study period. This lack of engagement may offer an explanation for P4's increased psychological inflexibility. External factors offer further explanation; P4 was not at University (summer break) for the majority of the intervention period, however, at follow up, P4 had returned to studying. P4's minimal engagement with the material accompanied by a change in environment may be an explanation for P4's reported scores.

Visual analysis demonstrated that all participant's psychological flexibility scores were stable or declining during the baseline phase (see figures 5-7).

Consideration of central tendency shows increases in all participants in the middle of the study (weeks 5 or 6 for all participants) on the daily measure of psychological flexibility and upward trends on all participants with this measure.

Visual analysis of the weekly measures (see figures 5-7) demonstrated that participant one (P1) showed an increase in psychological flexibility within the first intervention phase (acceptance) and all participants showed slight increase in scores in the first stages of the intervention phase with larger increases in scores occurring usually during the mindfulness and values stages of the intervention. Two participants' scores remained stable across the intervention phase (P4, P5). As discussed, the qualitative data indicates that P4 had

minimal engagement with the material. Similarly, P5 had not reported any noticeable change during the study period however during the weekly telephone contact P5 had demonstrated engagement with the tasks, as evidenced by discussion around the exercises within the chapters provided. During the change interview P5 reported finding the self help material challenging to understand at times which may have impacted on how P5 used this material; which may have had a subsequent impact on P5's scores.

Graphs displaying the changes in weekly measures across psychological flexibility, perfectionism and distress can be viewed in figures 5-7 below. To aid visual analysis, scores on the AAQ-II, FMPS and DASS-21 have been reversed so that increasing scores demonstrate improvement.

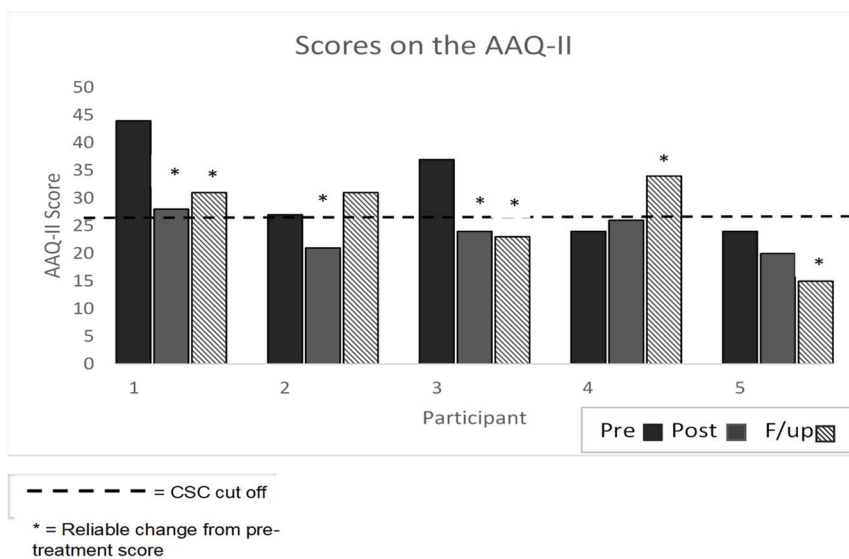
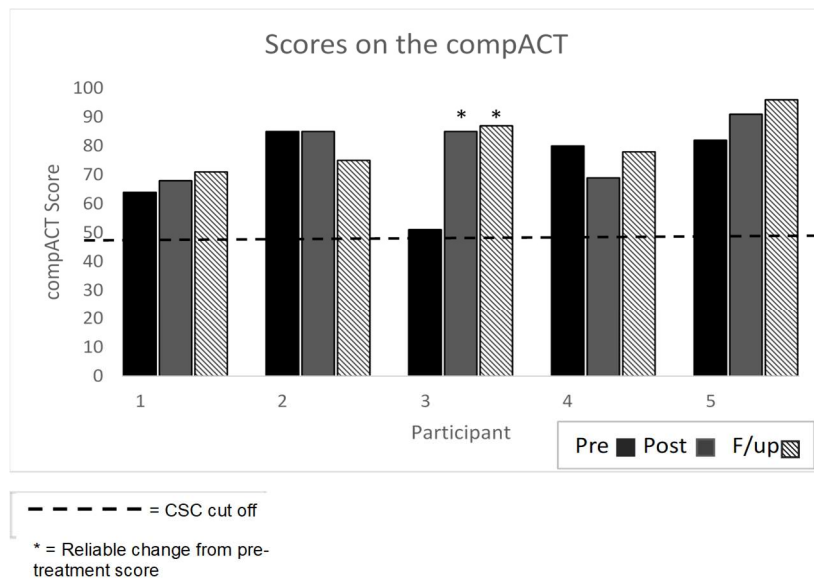
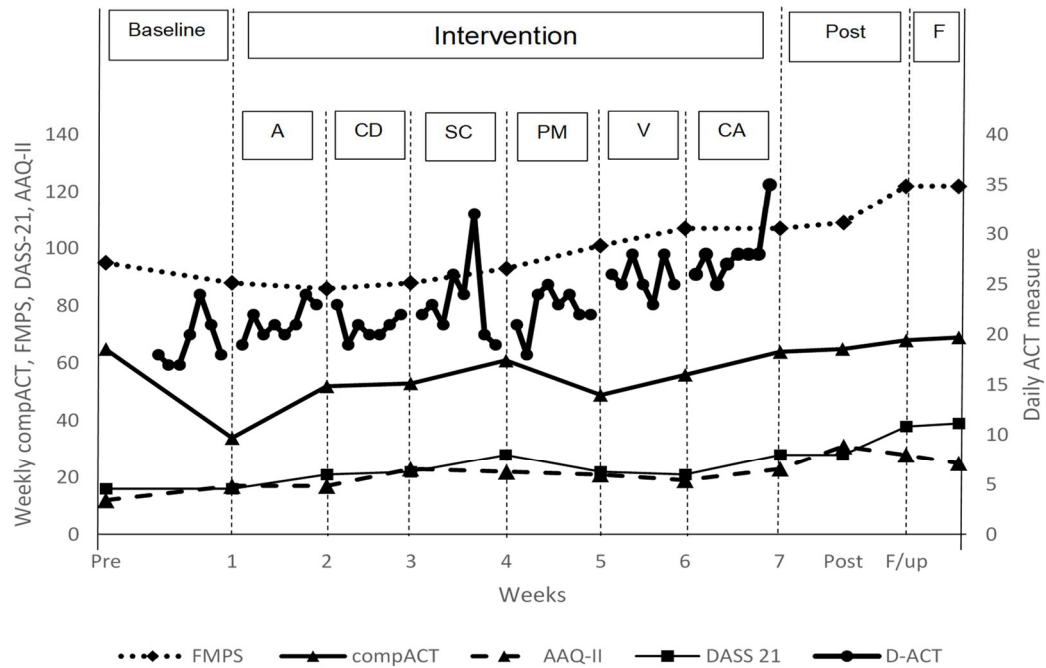


Figure 4. Two graphs showing change of scores in psychological flexibility across participants on the compACT (increased scores = greater psychological flexibility) and the AAQ-II (decreased scores = greater psychological flexibility).

Participant 1



Participant 2

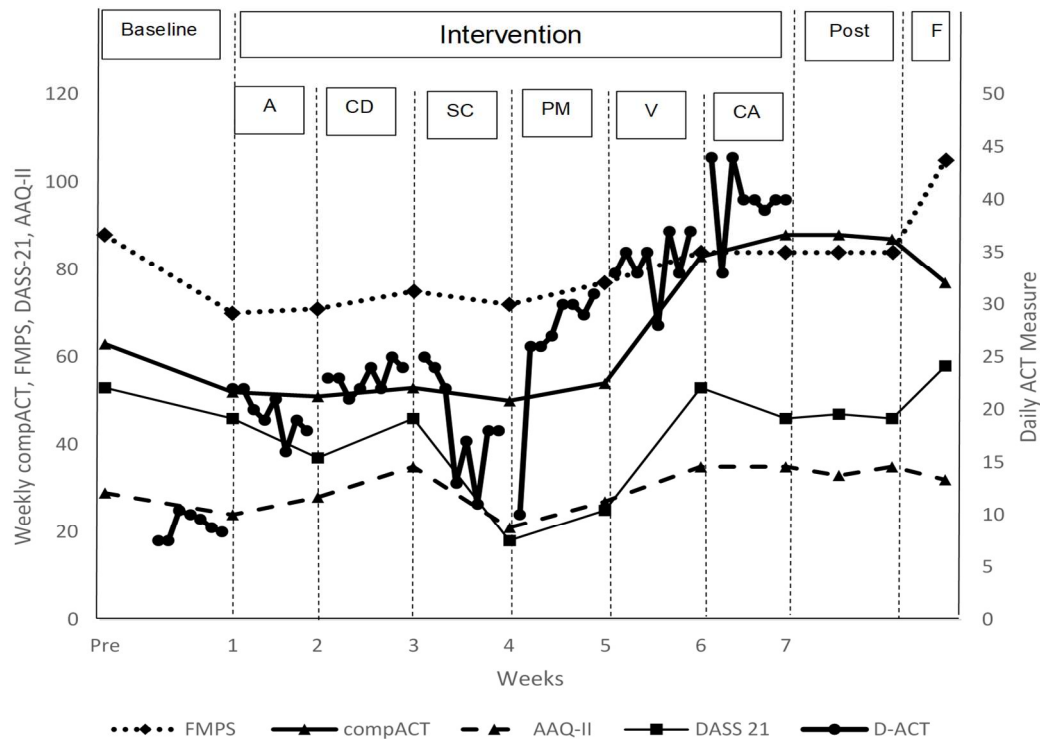


Figure 5. Graphs displaying scores on weekly measures and daily psychological flexibility measure across the different phases of the intervention stage for participants one and two. Increasing scores = improvement.

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase), P (Post-intervention), F (Follow up)

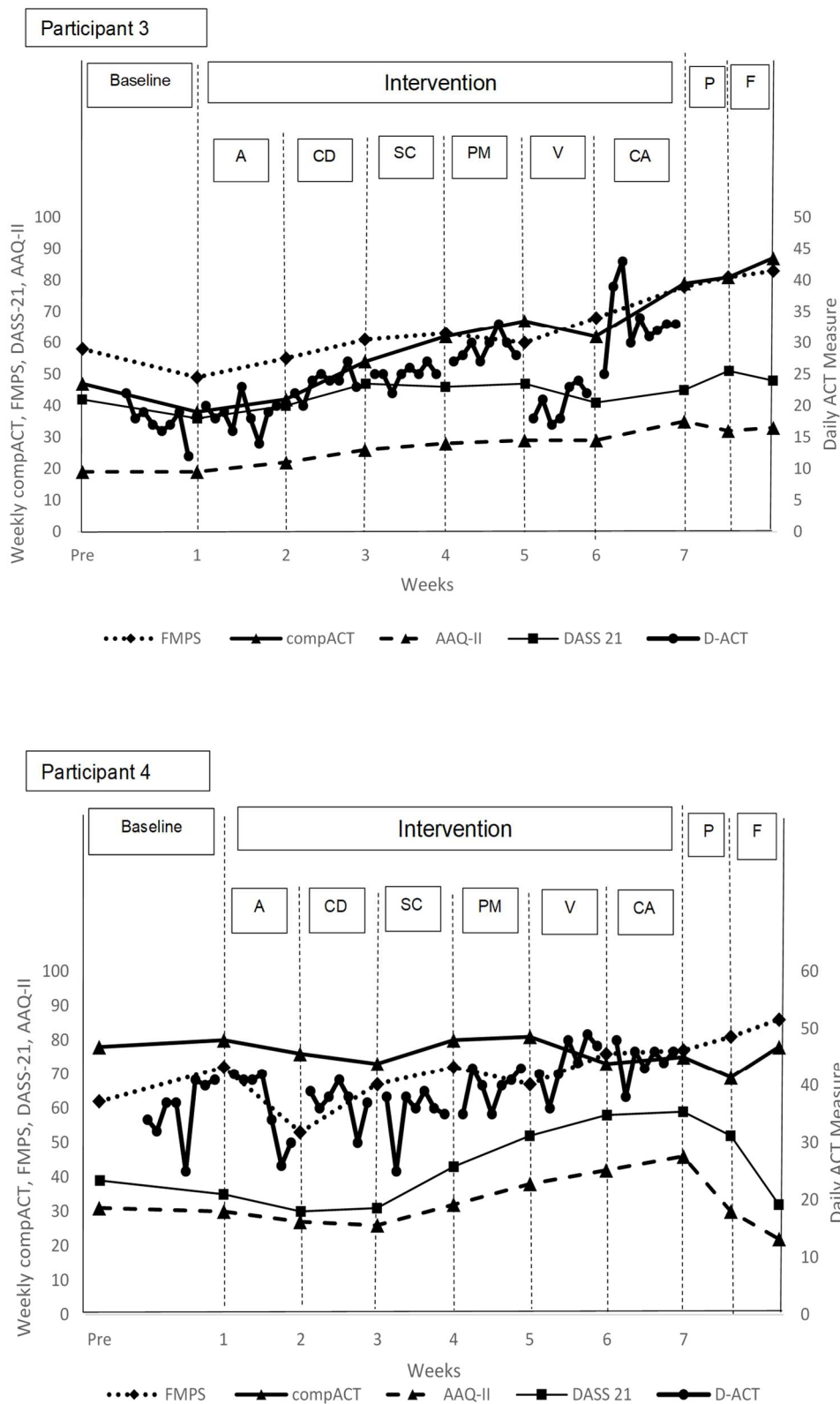


Figure 6. Graphs displaying scores on weekly measures and daily psychological flexibility measure across the different phases of the intervention stage for participants three and four. Increasing scores = improvement

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase), P (Post-intervention), F (Follow up)

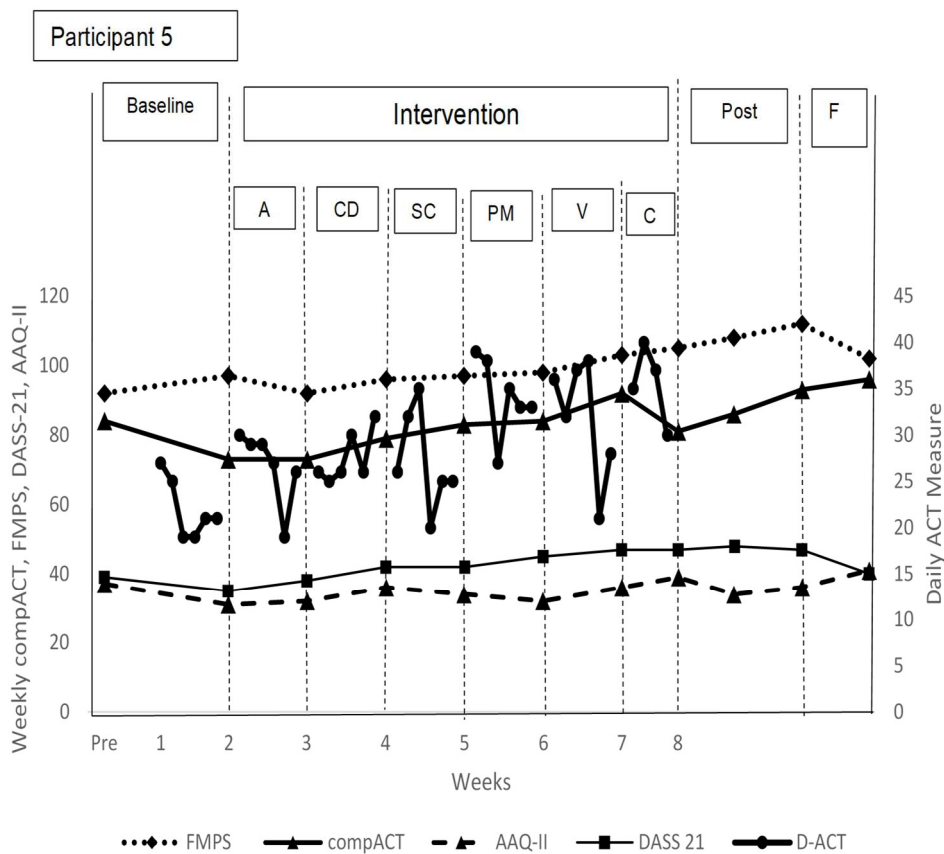


Figure 7. Graphs displaying scores on weekly measures and daily psychological flexibility measure across the different phases of the intervention stage for participant five. Increasing scores = improvement

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase), P (Post-intervention), F (Follow up)

[See extended paper section 3.1 for further discussion of psychological flexibility results]

Perfectionism

Figure 8 illustrates that all participants showed a reduction in scores on the FMPS with four participants showing reliable change post-intervention which was maintained at the six week follow up in three participants. P2 showed an increase in perfectionism post-intervention, however this decreased at the six week follow up demonstrating a reliable change from pre-intervention. P3 and P4 had scores indicating a clinically significant change.

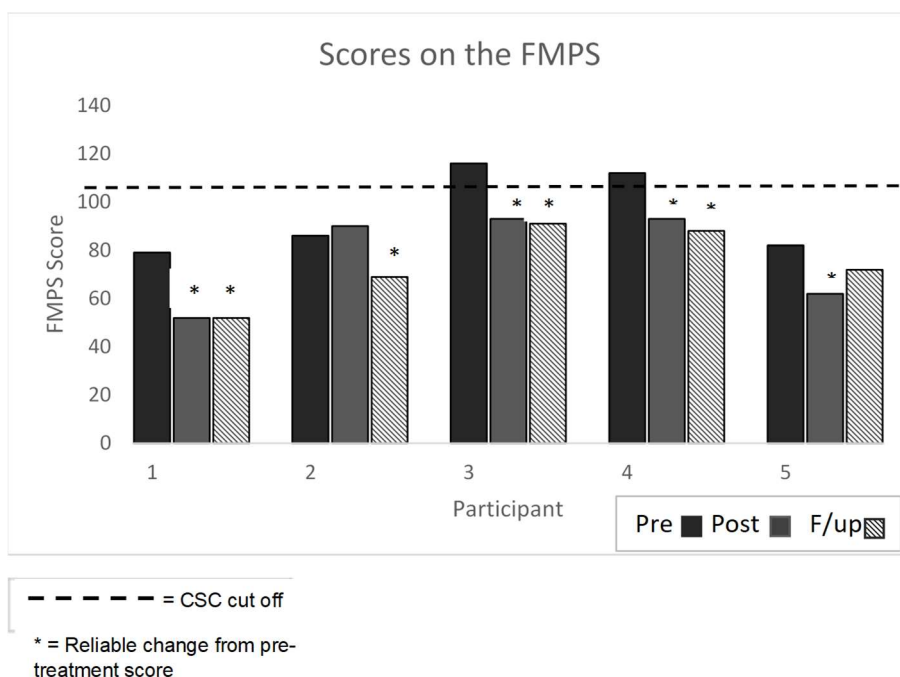


Figure 8. Graph showing change of perfectionism scores across participants (Decreased scores = Decreased perfectionism)

To investigate the effect of the individual ACT processes on the maladaptive perfectionism domains, the results from the subscales of the compACT (open to experience (OE), Behavioural awareness (BA) and Valued action (VA)) were graphed alongside the subscales from the FMPS considered to be representative of maladaptive perfectionism (Concern over mistakes, Doubts about actions and personal standards) (See figures 9 and 10).

All participants showed an improvement in the concern over mistakes (CM) domain. This is consistent with the qualitative feedback from P1, P2 and P3 who all talked about noticing changes in their perfectionism which they attributed to participation in the study. Most improvement in CM occurred following the present moment awareness phase of the intervention. The doubts about actions (DA) domain appears stable throughout the intervention across all participants. The personal standards domain appears stable throughout the intervention with some slight increases yet these are not maintained at follow up. Behavioural awareness and concern over mistakes scores show similar patterns in P2 and P4 and Valued action changes are mirrored in the CM scores in two participants.

Participant 1

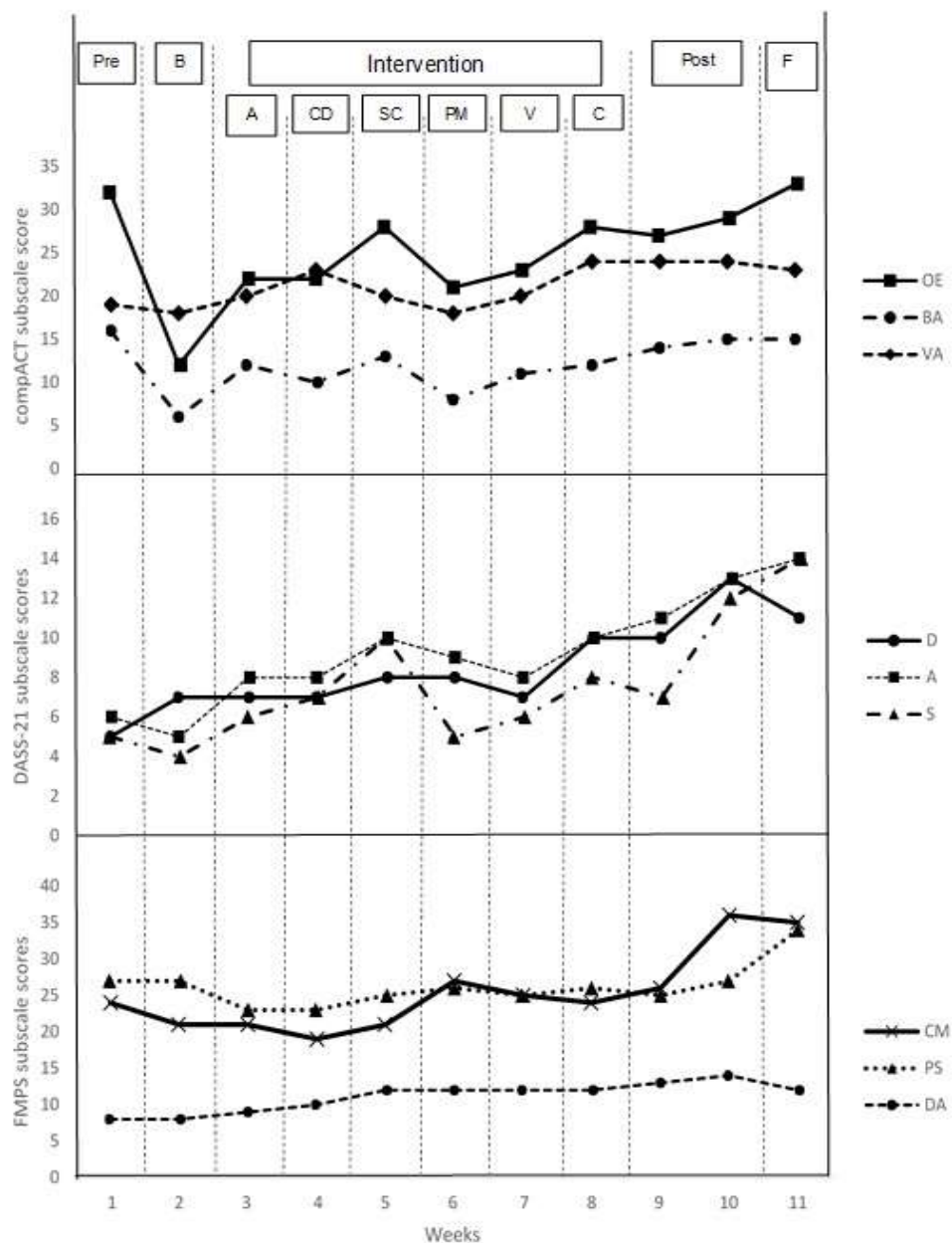


Figure 9. Visual representation of changes in subscale scores on weekly measures across the study period for participant 1. N.B. FMPS and DASS-21 scores reversed for visual analysis therefore increasing scores indicate improvement

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), C (committed action phase), P (Post-intervention), F (Follow up), Vertical Axis: OE (Openness to experience), BA (Behavioural awareness), VA (Valued action), D (Depression), A (Anxiety), S (Stress), CM (concern over mistakes), PS (Personal standards), DA (Doubts about actions)

Participant 3

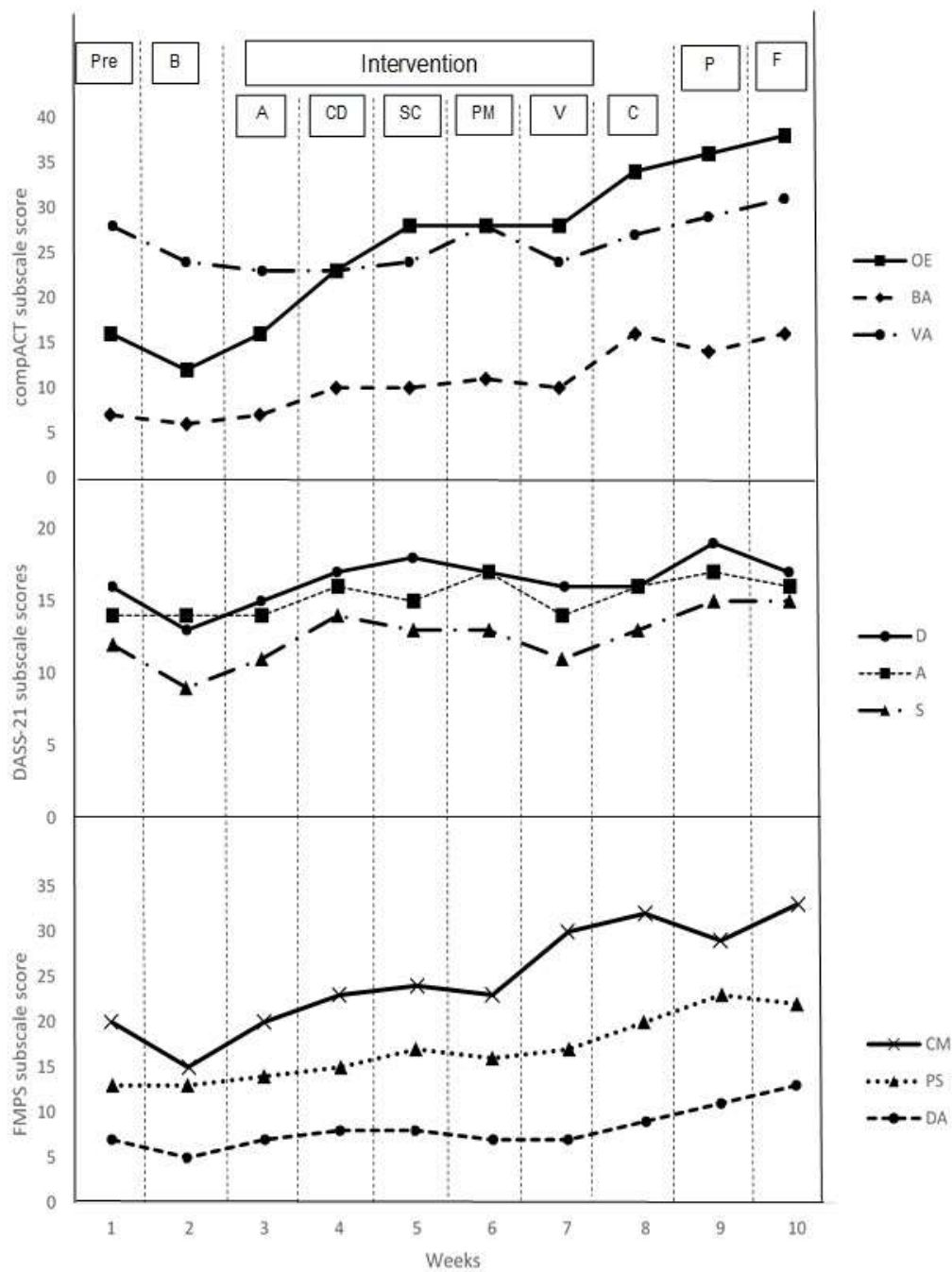


Figure 10. Visual representation of changes in subscale scores on weekly measures across the study period for participant 3. N.B. FMPS and DASS-21 scores reversed for visual analysis therefore increasing scores indicate improvement

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), C (committed action phase), P (Post-intervention), F (Follow up) Vertical Axis: OE (Openness to experience), BA (Behavioural awareness), VA (Valued action), D (Depression), A (Anxiety), S (Stress), CM (concern over mistakes), PS (Personal standards), DA (Doubts about actions)

Results from the behavioural tasks can be viewed in Table 6. Changes in time are considered for the bead sorting tasks and an efficiency score for the proof reading task. Efficiency scores were calculated by completing a signal detection analysis examining hits and false alarm rates for the task which produced a d prime number indicating the sensitivity to the task. The higher the d prime number, the more sensitive the participant was to 'hits', in other words, the more accurate the participant was.

Table 6

Results of the behavioural tasks

Ppt	Stage	Bead sorting (seconds)	Jumping to conclusions (no. beads)	Proof reading Time (mins/secs)	Proof reading accuracy (d')
1	Pre	68	19	11.44	1.207
	Post	71	24	5.09	0.604
	Follow up	62	22	6.25	1.055
2	Pre	69	41	25.00	1.598
	Post	55	21	21.34	1.835
	Follow up	56	12	14.40	2.041
3	Pre	79	6	16.34	2.483
	Post	79	3	15.07	2.456
	Follow up	81	3	11.45	2.483
4	Pre	87	53	17.09	2.125
	Post	100	43	10.27	1.948
	Follow up	105	43	8.56	1.873
5	Pre	62	4	23.14	1.609
	Post	58	4	22.58	2.130
	Follow up	55	4	20.02	1.485

Mixed results were found on time taken to complete the bead sorting task, with three participants showing time reductions and two showing an increase in time taken at follow up. All participants chose to check their accuracy in this task at all three time points. Three participants showed a reduction in the number of

beads selected to draw a conclusion in the jumping to conclusions task; this was maintained at the six week follow up.

P2 had greater accuracy in reduced time on the proof reading task. This is consistent with P2's comments during the change interview that they were now "*less concerned about making mistakes*". P1 and P3 had time reductions of five minutes with maintained accuracy. P3 commented during the change interview that their "*view on what's important has changed*" and that they were "*letting things go*" and "*taking more risks*". Following the proof reading task, P1 was observed to state "*it doesn't matter if I get it wrong*". This qualitative data is consistent with the time and accuracy scores for these participants. P4 had a reduced time but also reduced accuracy and P5 remained stable in time and accuracy.

[See extended paper section 3.2 for further discussion of perfectionism results]

Distress

Figure 11 illustrates that four participants had reliable decreases in scores on the DASS-21 from pre-intervention to post-intervention with one reliably decreasing at the six week follow up. Three participants showed an increase in DASS-21 scores from post-intervention to the six week follow up. P1 showed clinically significant change from pre- to post-intervention and this was maintained at follow up. However, during the change interview P1 disclosed commencement of anti-depressant medication during the study period therefore these results should be considered with caution.

Visual analysis demonstrates that trends remained stable for two participants (P1, P5) with increasing trends (indicating improvement) for the remaining three participants.

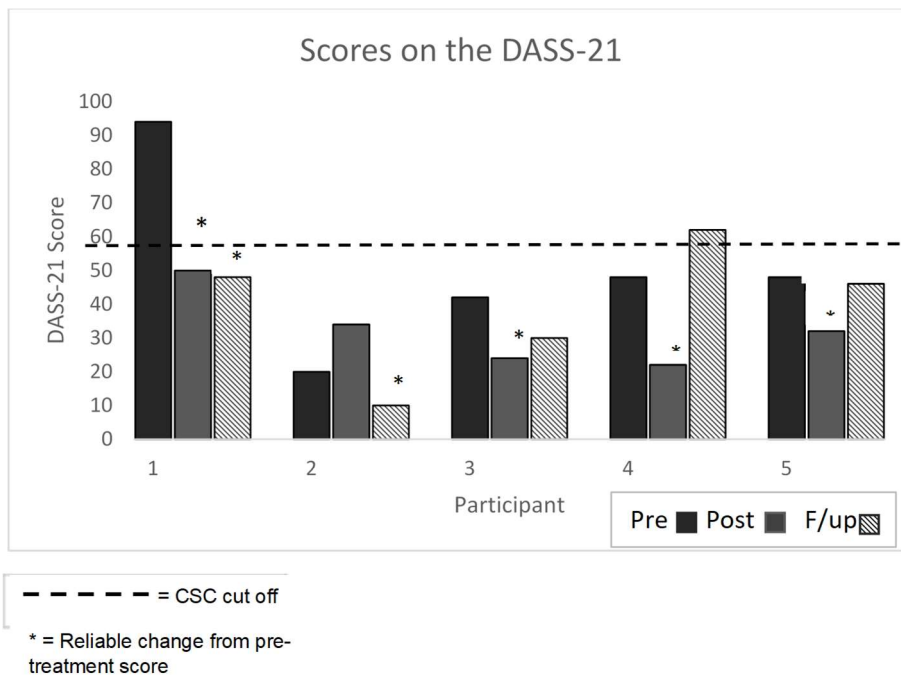


Figure 11. A graph showing changes in distress (DASS-21 scores) across the study. Decreasing scores indicate improvement.

Visual analysis of the subscales of the DASS-21, FMPS and compACT (see figures 9 & 10) demonstrate that changes in psychological flexibility (compACT) mirror changes in distress (DASS-21) across four participants. These changes occur within the present moment awareness and values phases of the intervention. This suggests these phases may be mechanisms of change across both psychological flexibility and distress. Improvement in concern over mistakes looks to match improvement in the depression subscale in four participants.

Daily measurement

Treatment effect sizes were calculated for the daily psychological flexibility, perfectionism and distress scores using the PEM method (Ma, 2006).

Table 7

Treatment effect sizes for psychological flexibility, perfectionism and distress

Participant	Psychological flexibility (compact; AAQ-II)	Perfectionism (FMPS)	Distress (DASS-21)
1	.98	.80	.98
2	.79	.81	.65
3	.94	.62	.72
4	.88	.70	.76
5	.88	.44	.35

*a score of $\geq .90$ indicates highly effective treatment, between .70 and .90 indicates moderately effective treatment and a score $\leq .70$ indicates no treatment effect (Ma, 2006).

Treatment is shown to be effective for all participants with moderate to high effect sizes for psychological flexibility. Moderate effects were found for four participants in perfectionism and moderate to high effects on distress.

[See extended paper section 3 for graphs of time series data taken from the daily measures]

Change Interview

The qualitative data from the change interview revealed that participants found the workbook “too academic” and “not relevant to perfectionism”. All participants said they found the metaphors in the workbook helpful and there were comments that more visual resources would have been helpful. Four participants felt they would recommend the book to others. Three participants felt the mindfulness chapter was the most helpful with two participants stating they didn’t find any chapters particularly useful. Three participants reported a change in relation to their perfectionism and one noted a change in behaviour following the intervention. Three participants felt they had achieved a positive change following the intervention which they attributed to participation.

[See extended paper section 3.4 for further details regarding change interview responses and section 3.5 for a summary of results for each participant]

Discussion

The study aimed to investigate the effect of a self help ACT intervention on multidimensional perfectionism and distress. It was hypothesised that the intervention would (1) lead to an increase in psychological flexibility, (2) lead to decreased scores on self reported multidimensional perfectionism, (3) lead to a change in overt perfectionistic behaviours and (4) lead to decreased scores on self reported distress.

The intervention appeared to influence psychological flexibility as increased flexibility was evident in four participants, as measured by the AAQ-II. One participant showed a reliable increase in psychological flexibility as measured by the compACT. The lack of reliable and clinically significant change measured by the compACT suggests that the reported reductions in perfectionism and distress may have been influenced by other factors. Participants were aware that the study was targeting perfectionism and recruitment focussed on those who felt their perfectionistic tendencies were problematic, it is therefore plausible that participant's self reported perfectionism and distress were linked to their knowledge and understanding of the aims of the study ('Hawthorne Effect'; McCambridge, Witton, & Elbourne, 2014). However, the results from the AAQ-II and visual analysis of the compACT subscales demonstrate increases in psychological flexibility across the study in most participants. Time series data indicated moderate to high treatment effects in psychological flexibility as measured by the daily questionnaire. Visual analysis indicated that changes occurred within most participants during the present moment awareness and values phases of the intervention suggesting these may be mechanisms of change for psychological flexibility. The differences in scores across the two measures of psychological flexibility may need further investigation. The compACT is a newly developed tool for measuring psychological flexibility whereas the AAQ-II has been well established. However, the AAQ-II has been criticised for its construct validity

with suggestion that it is a measure of distress rather than psychological flexibility (Francis, et al. 2016). The results of this investigation demonstrate that as psychological flexibility increases on the AAQ-II, distress decreases on the DASS-21. This may support the notion that increased psychological flexibility leads to decreases in distress or may be evidence that the AAQ-II is merely measuring a similar construct (distress) to the DASS-21.

[See extended paper section 4.1 for further discussion of the psychological flexibility results and 4.4.1 for further discussion of the measures of psychological flexibility]

Decreased scores in self reported perfectionism were found across participants. The FMPS total scores appeared to change gradually across the intervention with no obvious reductions during a particular phase, however, the concern over mistakes (CM) domain shows change occurring following the present moment awareness phase of the intervention. The CM subscale also followed the pattern of the behavioural awareness and valued action scales of the compACT in two participants which may suggest that increases in psychological flexibility associated with behavioural awareness and valued action impacts on concern over mistakes.

Examination of the FMPS subscales associated with maladaptive perfectionism mirrored previous research which shows that targeting perfectionism leads to decreased concern over mistakes in perfectionists. The reductions in concern over mistakes and decreased scores on the depression subscale of the DASS-21 are in line with previous research which has highlighted correlations between these constructs (Frost, et al., 1993; Frost et al., 1995; Enns & Cox, 1999). Changes in concern over mistakes occurred across the present moment awareness and values stages of the intervention phase suggesting that these processes may be mechanisms of change for both psychological flexibility and perfectionistic concern over mistakes. The present moment awareness phase of the intervention refers to noticing what one is experiencing and combines this with the acceptance and cognitive defusion techniques to support the ACT notion of “letting go”. By noticing thoughts and accompanying feelings or sensations related to concern over mistakes, this phase encouraged

participants to acknowledge these and let them go without acting upon them. By doing so, this may increase psychological flexibility and provide some explanation of the observed improvement in concern over mistakes. In the model of clinical perfectionism, the appraisal of both meeting and failing to meet standards leads to self criticism and an impact on self worth. By acknowledging the appraisal but not fusing with it, this may support psychological flexibility. Awareness of one's values and acting in accordance with them is believed to increase psychological flexibility (Hayes, et al., 2012). With perfectionists, this phase of the intervention may have encouraged them to notice the standards they hold and what values these standards may be in line with. Encouragement of engagement with values rather than individual goals may enhance psychological flexibility which may target the inflexible standards which are assumed to be at the core of perfectionism (Shafran et al., 2010).

The subscale of personal standards remained stable in most participants across the study despite the apparent reduction in distress. This offers support to the theory that it is the combination of high standards and critical evaluations that leads to distress within perfectionists (Frost et al., 1990).

[See extended section 4.2 for further discussion of relationship between maladaptive perfectionism domains and the ACT processes]

The intervention showed some impact on overt perfectionistic behaviours, however, the results were inconsistent across participants. One hypothesis is that the behaviours remained the same but the distress associated with them was reduced (evidenced by decreased scores on the DASS-21). Within the ACT model, there is emphasis on bringing behaviour in line with one's values. It is plausible that the behavioural tasks employed were not reflective of the participants' values therefore the behaviours being targeted were unlikely to change. Further investigation of behavioural changes in individuals following an ACT intervention would offer further understanding in this area.

Self reported distress improved for four participants and results indicate that as psychological flexibility increased, reported distress decreased. This is in line with previous ACT research (Hayes, et al., 2006). Changes in distress occurred during the present moment awareness and values stages of the intervention

phase. Four participants showed an increase in DASS-21 scores from post-intervention to follow up. This could be the result of the withdrawal of support that occurred following the post-intervention test battery. At this stage, participants were no longer contacted daily and weekly nor did they have to complete daily or weekly measures. Thus, participants were no longer provided a tool for checking in with their thoughts and feelings on a regular basis. This is supported by verbal feedback from participants indicating that they would not have engaged with the book in the same way if they did not have to discuss it within the weekly telephone calls. This has implications for the use of self help interventions, particularly, if the factor that encouraged change was the researcher support and not the content of the self help intervention. This would suggest that for reliable change to occur, individual contact with a healthcare professional may be necessary.

[See extended section 4.3 for discussion on the impact on distress]

Results from the six week follow up indicate that changes in psychological flexibility and perfectionism were maintained in most participants. Psychological flexibility is impacted by an individual's history and experience therefore someone who has been using acceptance and defusion techniques will be building a history with fewer moments of entanglement with their distressing thoughts (Hayes & Lillis, 2012). As these experiences of disentanglement increase, this is likely to have a positive impact on future behaviours. This has been evidenced in previous research which has shown ACT has an "incubation effect" (Clarke, et al., 2014). A longer follow up period would provide evidence of whether this theory would be supported.

Results indicate that targeting the verbal and cognitive rules associated with perfectionism using an ACT intervention can lead to positive change for individuals, such as reductions in concern over mistakes and reductions in distress.

Strengths and limitations

Design:

The study utilised a multiple baseline design whereby participants engaged in treatment at different times thereby strengthening any inferences made from the data regarding treatment effectiveness, and reducing threats to internal validity (e.g., maturation) (Barlow & Hersen, 1984). Inferences were also strengthened by the weekly telephone contact with participants and the incorporation of the change interview which provided qualitative data to consider in parallel with the quantitative data from the measures used.

The daily and weekly measures and the researcher contact within the study should also be considered regarding their impact on the study outcomes.

Whilst these elements of the study were not the direct intervention, they encouraged participants to think about the ACT processes, perfectionism and distress daily and encouraged participants to engage with the intervention.

Conversely, the weekly telephone support, daily text contact and daily and weekly outcome measures, which set out to strengthen the scientific rigor of the study, meant the interpretation of the effectiveness of the intervention held less clarity. Non-specific factors such as the development of the relationship between researcher and participant may have impacted on the results.

However, research suggesting that a therapeutic relationship alone is enough to elicit positive change is limited (Priebe & McCabe, 2008). More positively, the weekly phone calls enabled the researcher to assess each participant's compliance and engagement with the self help materials (though these were not subject to fidelity checks) which could then be used alongside the quantitative data. For example, during the weekly telephone calls, P3 was subjectively judged by the researcher to be the most engaged in the intervention and P4 was judged to be least engaged. This is synonymous with the qualitative data from the change interview where P3 discussed positive changes as a result of participation in the study and P4 described no change as a result of participation in the study. This is also evident within the quantitative data as P3 demonstrated improvements across all measures over the study period and P4 demonstrated a decrease in psychological flexibility over the study period.

Level of engagement is an important factor within psychological therapies and this may offer explanation of these results. Furthermore, due to P3's higher levels of engagement, this may have impacted on the relationship developed between the researcher and P3 leading to improved therapeutic alliance, which has been demonstrated frequently as a non-specific factor for effectiveness of interventions. The weekly phone calls were not subject to fidelity checks and therefore it is not possible to ensure that each participant received the same level of support or encouragement to engage adding further ambiguity to interpretation of the results.

Whilst inclusion of the weekly support may have clouded the interpretation of the effectiveness of the intervention specifically, the weekly support is comparable to the style of current IAPT bibliotherapy practice which reflects current clinical practice. As a measure of the therapeutic relationship was not completed, it is difficult to ascertain the impact of this on the results, however all participants reported that they found the weekly contact helpful therefore it can be assumed that the chapters provided in addition to the weekly support was an effective intervention.

A further consideration is the difficulty in interpretation of the time series data without knowing the time taken for each process to come into effect following participants reading the chapter. Therefore, improvements observed during the present moment awareness phase of the intervention may be the result of (i) the chapter related to this process, (ii) a carryover effect from the previous chapter(s) or (iii) an accumulation effect from all the previous information provided by both the researcher and the prior chapters. This makes interpretation of the specific mechanisms of change difficult. Despite this, carryover and/or accumulation effects remain related to lasting treatment effects. The addition of participant feedback to the study design, through the weekly telephone support and change interview, enables some strengthening of the inferences made from the data. For example, when participants reported finding a particular chapter helpful, this could be compared with the scores from the week that chapter was provided. This does not appear conclusive across participants although there is some indication of slight change for some participants on the weeks they indicated that they found helpful. For example,

P3 reported finding the Committed Action chapter helpful and scores on the daily measure of psychological flexibility are higher on this week.

[See extended section 4.5 for methodological considerations]

Measures:

The daily measure was not a standardised measure and therefore inferences made from time series data should be considered as a snap shot of what the daily ACT, FMPS and DASS-21 scores may have been.

Sample:

Three participants disclosed that they had read self help guides in the past. The same three participants noted positive changes during the change interview and attributed these to participation in the study. It may be that recruitment led to a bias within the sample of participants who were actively seeking a way to make changes to their lives which may have led to the positive changes they experienced. Additionally, the sample was all female.

[See extended sections 4.4, 4.5 and 4.6 for further discussion of strengths and limitations of the study]

Conclusion

A single case experimental design was used to investigate the impact of an ACT guided self help intervention on multidimensional perfectionism and distress. The findings are mixed with evidence of significant change for some participants in some outcomes. Despite this, the results offer support for the use of a guided self help ACT intervention to target perfectionism leading to reductions in associated distress. The results indicate that the ACT processes of present moment awareness and values may be key mechanisms of change for psychological flexibility, perfectionism and distress.

[See extended paper section 4.7 for clinical implications]

Future research recommendations

Further investigation of present moment awareness and valued action as mechanisms of change is warranted. The results implicated these processes as impacting on psychological flexibility, perfectionism and distress. Future research could investigate this further, considering what makes these processes important for change and consideration of any other mediating factors. This would enable a fuller understanding of the ACT processes and could lead to improvements in the use of ACT as a treatment intervention. A comparison of an ACT intervention for perfectionism with a CBT intervention would provide further evidence of the potential utility of ACT as a first line intervention strategy.

[See extended paper section 4.8 for further research recommendations]

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Extended Paper

1. Extended Background

1.1 The construct of perfectionism

Perfectionism is a difficult construct to conceptualise due to the diversity of presentations among perfectionists and that some individuals appear negatively impacted by perfectionism whilst others consider it an advantage. This has led to ongoing debate among researchers regarding the nature and impact of this construct. (Rasmussen & Troilo, 2016). There is currently no clear definition of perfectionism meaning the prevalence of this construct among both the general population and clinical populations is difficult to measure.

1.1.1 Unidimensional perfectionism

Early perfectionism theorists focused on perfectionism as a unidimensional construct with debilitating effects on individuals; leading to the development of psychological difficulties (Pacht, 1984). Hamacheck (1978), in a seminal paper, was the first to suggest that perfectionism may have two forms, termed “normal” and “neurotic”. Normal perfectionism was described as being when an individual sets high personal standards but allows themselves to adapt these standards appropriately to a given situation whereas neurotic perfectionism does not allow room for mistakes; leading an individual to feel like they have never done enough (Hamacheck, 1978). Despite this distinction, the dominant view of early researchers remained that perfectionism is neurotic and associated with psychopathology. Measures developed to assess perfectionism were constructed to fit the assumption that perfectionism was unidimensional. Burns (1980) developed the Burns perfectionism scale which was widely used to examine perfectionism. Early research into perfectionism found individuals diagnosed with depression (Ranieri et al., 1987), eating disorders (Rosen, Murkofsky, Steckler, & Skolnick, 1989) and obsessive compulsive disorders (Rasmussen & Eisen, 1992) had high levels of perfectionism. Further support was found in studies with non-clinical populations which showed those with high levels of distress had high levels of perfectionism (Flett, Hewitt & Dyck, 1989). The use of one dimensional measures, such as the Burns perfectionism scale (Burns, 1980), has been

criticised by later researchers claiming that the measures were developed with the assessment of psychopathology in mind, rather than with the measurement of perfectionism as a separate construct; leading to biased results (Stoeber & Otto, 2006).

1.1.2 Multidimensional perfectionism

Frost, Marten, Lahart & Rosenblate (1990) examined existing literature and were among the first to conceptualise perfectionism as a multidimensional construct. Previous literature had highlighted the importance of setting excessively high standards as a major component of perfectionism (Burns, 1980; Hamacheck, 1978; Pacht, 1984) however Frost, et al. (1990) argued that this alone was not pathological; that there was a distinction between those who set high standards and are competent and successful and those who develop psychopathology associated with perfectionism. Frost, et al. (1990) considered Hamachek's notion of neurotic and normal perfectionism and concluded that perfectionism becomes problematic when the setting of high standards is accompanied by a tendency to make overly critical evaluations of one's behaviour. Critical evaluative tendencies concluded from previous literature included concern over making mistakes and a sense of doubt over actions. Hamachek (1978) had theorised that concern over making mistakes leads perfectionists to appraise even small errors as total failure therefore perceiving that the set personal standards have not been achieved. Fear of failure then becomes the driving force for striving behaviours (Hamachek, 1978). Doubts about actions, "the sense that a job is not satisfactorily completed" (p. 451, Frost, et al., 1990), is a major consideration within literature around obsessional experiences and Reed (1985) suggested perfectionism is a characteristic of obsessive compulsive presentations, whereby the key feature is uncertainty around task completion. Perfectionism researchers also placed emphasis on the role of parenting and family experiences in the development of perfectionism and the value perfectionists place on parental expectations and evaluations and on order and organisation (Frost, et al., 1990).

[See section 1.2 for further discussion of the role of parenting in the development of perfectionism]

Examination of this literature led Frost, et al. (1990) to conclude that there are six facets to the construct of perfectionism; concerns over mistakes; doubts about actions; personal standards; parental expectation; parental criticism and organisation.

This multidimensional understanding of perfectionism was supported by a separate research group (Hewitt & Flett, 1991) although the dimensions identified differ. Hewitt and Flett (1991) described multidimensional perfectionism as having three dimensions termed self oriented perfectionism (SOP), other oriented perfectionism (OOP) and socially prescribed perfectionism (SPP). These relate to when an individual holds unrealistic expectations of themselves (SOP), the expectation of others to be perfect (OOP) and beliefs that other people expect perfection and anything less would be unacceptable (SPP) (Hewitt & Flett, 1991). Within the perfectionism literature, perfectionism is often divided into the six domains described by Frost, et al. (1990) and/or the three domains identified by Hewitt & Flett (1991). These are further classified as being either related to adaptive perfectionism or maladaptive perfectionism. Dimensions which have been categorised as maladaptive include the concern over mistakes, doubts about actions and personal standards domains identified by Frost et al. (1990) and the self oriented and socially prescribed perfectionism domains described by Hewitt and Flett (1991).

The multidimensional approach to perfectionism has been criticised, with suggestion that the widespread use of the measures developed by Frost et al. (1990) and Hewitt and Flett (1991) has led to the construct being equated to its method of measurement rather than the independent presentations observed in clinical practice (Shafran, Cooper & Fairburn, 2002). Shafran, Cooper and Fairburn (2002) argue that the measures assess too broad a range of features associated with the construct of perfectionism and that only the self oriented perfectionism, personal standards and some of the concern over mistakes items within the measures assess the construct and the other subscales merely

assess elements related to the construct of perfectionism but are not integral dimensions of it. The critical element, according to Shafran, et al. (2002) is the impact on self evaluation. Multidimensional perfectionism proponents have countered this argument stating that empirical evidence demonstrates the relationships between psychopathology and the multiple domains of perfectionism (Hewitt, Flett, Besser, Sherry & McGee, 2003).

Shafran, et al. (2002) argue that research should focus on clinically relevant perfectionism, which they describe as “the overdependence of self evaluation on the determined pursuit of personally demanding, self imposed standards in at least one highly salient domain, despite adverse consequences” (p. 778; Shafran, et al., 2002). They posit that interactions between clinical perfectionism and treatment outcomes will be seen when the domain affected by a psychiatric disorder is coherent with the domain in which the perfectionism is expressed. For example, if there is a diagnosis of social phobia and the perfectionism is salient in terms of social performance.

1.2 The development of perfectionism

The role of parenting in the development of perfectionism is widely acknowledged. It is accepted that influences for perfectionism may come from a variety of sources, however, parenting is believed to play a strong role in the transmission of perfectionistic values and behaviours from parent to child (Rasmussen & Troilo, 2016).

The social learning model (Flett, Hewitt, Oliver & Macdonald, 2002) considers the role of imitation of parental behaviours in the development of perfectionism. This model is rooted in social learning theory whereby Bandura (1977) posits that behaviours can be developed through direct experience or through observation of the behaviour of others. Exposure to parents who have perfectionistic traits or expectations of perfection from parents are believed to negatively impact a parent-child relationship with reports of poorer attachments and increased fear of abandonment (Brennan & Shaver, 1995).

Observation learning may play a role in the development of perfectionism through the impact of modelling (Rice, Ashby & Preusser, 1996). Perfectionistic parents may unintentionally teach their children to develop high standards. When these standards are met, the child gains a sense of satisfaction. If high standards are not met, then parents may begin to expect more from the child, inadvertently showing the child that acceptance comes from achieving very high standards (Flett, Hewitt & Singer, 1995). This is an example of positive modelling. A process of negative modelling may also occur whereby a child observes parents in a consistent state of disorganisation therefore developing perfectionistic tendencies as a means of obtaining parental acceptance (Flett, et al., 1995).

Rice and Mirzaden (2000) found that participants with adaptive perfectionism demonstrated more secure attachments than those with maladaptive perfectionism. Modelling of perfectionistic attitudes and behaviours by parents has been suggested to lead to development of perfectionistic tendencies in children (Barrow & Moore, 1983). Continued exposure to perfectionistic tendencies is suggested to lead to the development of the same or similar attitudes and behaviours (Appleton, Hall & Hill, 2010). Significant correlations have been found between parent's perfectionism and the perfectionistic tendencies in their children (Frost, Lahart & Rosenblate, 1991).

Early perfectionism theorists highlighted the role of the family environment and parenting styles in the development of perfectionism (Frost, et al., 1991). Family environments where performance is met with criticism (either overt or implied through the setting of high standards and expectations) is hypothesised to lead children to learn to critically evaluate their own performance (Kawamura, Frost & Harmatz, 2002). There is empirical evidence supporting this hypothesis (e.g., Flett, et al, 1995; Frost, et al., 1991; Rice, et al., 1996).

Hamachek (1978) describes three characteristics within a family environment which lead to the development of perfectionism; non approval, inconsistent approval or conditional approval. When parents consistently urge a child to do better, the child develops a belief that their behaviour is never satisfactory or good enough for parental approval. This is hypothesised to lead to the

development of perfectionism (Missildine, 1963). This style of parenting is often referred to in the literature as “perfectionistic parenting” (Frost, et al., 1991). Enns, Cox and Clara (2002) found that perfectionistic parenting was associated with both adaptive and maladaptive perfectionism but that critical parenting characterised by high standards and expectations did not have a significant relationship with adaptive perfectionism. When parental approval (love) is contingent on performance then performance becomes overvalued (Blatt, 1995; Frost, et al., 1991) and a fear of making mistakes develops as a result of the disappointment and perceived rejection from parents following errors (Burns, 1980).

Negative parenting behaviours such as authoritarianism (Hibbard & Walton, 2014) and psychological control (Soenens et al., 2005) have been associated with the development of maladaptive perfectionism. Baumrind (1978) described parenting as either authoritative or permissive in style with varying degrees of demandingness and responsiveness. Authoritarian parenting places emphasis on discipline over nurturing, with high levels of demandingness and low levels of responsiveness (Baumrind, 1978). A permissive parenting style is described as low levels of demandingness and high levels of responsiveness. This idea was supported by Maccoby and Martin (1983) who concluded a third style of indifferent parenting whereby low levels of responsiveness and demandingness lead to minimal involvement with a child. Neumeister and Finch (2006) found an indirect relationship between perfectionism and parenting style whereby authoritarian and indifferent parenting styles predicted insecure attachments, which then predicted perfectionism. Flett, Hewitt and Singer (1995) also found high levels of authoritarian parenting was associated with perfectionism. This result, however, was only found amongst male subjects.

Harsh parenting styles have been found to be associated with perfectionism with significant correlations between mothers self reported harshness and daughters concern over mistakes (Frost, et al., 1991). Subjects with maladaptive perfectionism have described parents as more demanding and critical than those with adaptive perfectionism (Rice, et al., 1996). Kawamura, Frost and Harmatz (2002) found significant correlations between perfectionistic concern over mistakes and reported paternal harshness in male and female

participants and with paternal and maternal authoritarianism in female participants. Significant correlations were found between perfectionistic doubts about actions and paternal authoritarianism and maternal harshness in male subjects. Craddock, Church & Sands (2009) found that family enmeshment, controlling parenting and authoritarian parenting styles were also significant predictors of maladaptive perfectionism.

Kawamura, et al. (2002) offer hypotheses as to why an authoritarian parenting style may be associated with maladaptive perfectionism. They consider that a child's self worth is contingent on parental approval, therefore, when performance is met with criticism, this can lead to fear of making mistakes, internalisation of parental criticism and the development of their own critical self evaluations. This is in line with theories presented in the early perfectionism literature (Burns, 1980; Driscoll, 1982).

Research into parenting style and its hypothesised impact on the development of perfectionism is limited as studies have focused either on perfectionist's own reports of parental styles or on parent's retrospective reports of their own parenting style. It is plausible that perfectionists own critical evaluations mean that any admonition from parents was interpreted as harsh criticism therefore leading them to report parents with harsher parenting styles or that perfectionists concerns over mistakes enable them to more easily recall occasions where parents were critical of them (Kawamura, et al., 2002).

1.3 The impact of perfectionism

Difficulties in perfectionists are believed to arise from the engagement in setting unrealistically high standards, overgeneralisation of failure, critical self evaluations and all or nothing thinking leading to only success or failure as possible outcomes (Hewitt & Flett, 1991). Perfectionism has been linked to numerous difficulties including eating disorders (see Franco-Paredes, Mancilla-Díaz, Vázquez-Arévalo, López-Aguilar, & Álvarez-Rayón, 2005), suicidality (see O'Connor, 2007), alcoholism (see Harter, 2000), physical health (e.g., hypertension) (Hewitt & Flett, 1991) and other psychopathologies (see Shafran & Mansell, 2001).

It is beyond the scope of this paper to review all the literature pertaining to psychopathologies that have been associated with perfectionism therefore emphasis is placed on the relationship between perfectionism and depression, anxiety and stress as these have been measured within the present study.

1.3.1 Perfectionism and Depression

There is substantial empirical evidence of a relationship between perfectionism and depression (Frost, et al., 1990; Blatt, 1995; Hill, McIntire & Bacharach, 1997; Lynd-Stevenson & Hearne, 1999; Shafran & Mansell, 2001).

Frost, et al (1990) examined the associations between perfectionism and depression and found significant correlations between overall perfectionism and ten out of twelve scales of the BSI (Brief Symptoms Inventory; Derogatis & Melisaratos, 1983) with the most significant results demonstrated with concern over mistakes and doubts about actions. Perfectionism was found to be associated with both dependency depression and self critical depression (Frost et al., 1990).

Strong associations have also been found between socially prescribed perfectionism (SPP) and depression in numerous studies (Enns & Cox, 1999; Hewitt & Flett, 1991; Hewitt, Flett & Ediger, 1996; Wyatt & Gilbert, 1998) and SPP has been found to predict increases in depressive symptoms over time (Hewitt, et al., 1996). Higher levels of self oriented perfectionism have been found in patients with depression when compared with patients with anxiety and a matched control group (Hewitt & Flett, 1991). Hewitt, Flett & Endler (1995) measured perfectionism, depression and coping among a clinical sample and found a positive correlation (0.50) between SPP and scores on the Beck Depression Inventory (BDI). More recent research supports this finding with positive correlations between the same items in a community sample of adults of 0.42 (Flett, Besser, Hewitt & Davies, 2007) and students at 0.30 (Flett, Besser & Hewitt, 2014). Some studies have demonstrated a predictive element of SPP on depression (O'Connor, Rasmussen & Haughton, 2010).

Self esteem, rumination and hopelessness have been linked to increased levels of depression in those high in perfectionism. Self esteem has been highlighted as a potential mediating factor between perfectionism and depression (Rice, Ashby & Slaney, 1998). Perfectionists are hypothesised to be exceptionally vulnerable to depression as it is predicted that their self esteem is based on achieving unattainable standards (Burns, 1980). Perfectionists view even minor negative feedback as complete failure (Hollender, 1965; Horney, 1950) thus, low self esteem is likely to be present. Hopelessness is theorised to be a cognitive component of depression (Beck, 1976) and feelings of hopelessness are hypothesised to arise from the fear of making mistakes leading to rejection from others (Shafran & Mansell, 2001).

The relationship between rumination and perfectionism has been examined. Rumination is hypothesised to occur when perfectionists fail to meet their standards which is in turn appraised as a failure (Flett, Madorsky, Hewitt & Heisel, 2002). Perfectionists then experience rumination related to automatic thoughts regarding their need to be perfect (Flett, Nepon & Hewitt, 2016); leading to feelings of worthlessness (Flett, et al., 2002).

1.3.2 Perfectionism and Anxiety

Empirical evidence demonstrates associations between perfectionism and anxiety disorders. Santanello & Gardner (2007) found that maladaptive perfectionism was associated with higher levels of worry. This then correlated with high levels of experiential avoidance causing a potential cycle of rumination, worry and experiential avoidance; reinforcing the worry. If a perfectionist worries they are unable to meet the standard set for a task, procrastination and avoidance are more likely to occur (Antony, Purdon, Huta & Swinson, 1998). Overall perfectionism, concern over mistakes, doubts about actions and parental expectations and concerns have been found to correlate with severity and frequency of procrastination behaviours (Frost, et al., 1990).

Social anxiety and obsessive compulsive disorder (OCD) have been closely linked with perfectionism (Antony et al., 1998). Strong correlations have been found between social anxiety and socially prescribed perfectionism (Blankstein,

Flett, Hewitt & Eng, 1993; Saboonchi & Lundh, 1997) and social anxiety and concern over mistakes and doubts about actions (Saboonchi & Lundh, 1997). Concern over mistakes has been found to be high in those with social anxiety (Antony, et al., 1998). Supporting this, Egan et al., (2011) found that the expectation of negative social interaction which leads to social anxiety is worsened by perfectionistic tendencies in adults.

A cognitive model of social phobia, developed by Heimberg, Juster, Hope and Mattia (1995), postulates that early experiences combined with a genetic susceptibility lead individuals to view social situations as threatening. Dysfunctional assumptions that threat can be avoided by perfect performance in the social situation results in anxiety and avoidance of situations where perfect performance is deemed unachievable. As perfect performance is unattainable, negative automatic thoughts regarding failure are experienced and reinforce the belief of threat (Heimberg, et al., 1995).

Juster, Heimberg, Frost & Holt (1996) found higher levels of concern over mistakes, doubts about actions and parental criticism in individuals with social phobia. The expectation of making mistakes combined with the importance placed on making mistakes and self critical evaluations is likely to create anxiety around social situations (Juster, et al., 1996).

Perfectionism was likened to OCD in early literature with Reed (1985) comparing the doubts about actions experienced by perfectionists to the uncertainty of task completion reported by those with OCD. Perfectionism has also been labelled one of the key cognitive factors involved in obsessive compulsive disorder (Obsessive Compulsive Cognitions Working Group, 1997) following evidence that those with OCD have much higher levels of socially prescribed perfectionism (Egan et al., 2011), concern over mistakes and personal standards (Antony et al., 1998) than non-clinical samples. Strong correlations have been reported between overall levels of perfectionism and subclinical symptoms of OCD (Frost, et al., 1990; Frost, Steketee, Cohn & Greiss, 1994; Rheaume, et al., 1995). Additionally, worry has been associated with high levels of parental expectation and criticism, concern over mistakes and doubts about actions (Stober & Joormann, 2001).

1.3.3 Perfectionism and Stress

Several studies have found associations between perfectionism and stress in clinical (Hewitt & Flett, 1993) and non-clinical populations (D'Souza, Egan & Rees, 2011; Chang, 2006; Chang, Watkins & Banks, 2004; Dunkley & Blankstein, 2000). Chang, Watkins and Banks (2004) found that maladaptive perfectionism was associated with greater levels of stress in women and D'Souza, Egan and Rees (2011) demonstrated a relationship between perfectionism, stress and burnout in clinical psychologists finding that those higher in perfectionism indicated higher levels of stress.

A stress-generation hypothesis is proposed by Hewitt, Flett and Ediger (1996) as an explanation for the relationship found between perfectionism and stress. Perfectionism may lead to increases in stress levels due to perfectionists' tendency to evaluate performance rigidly and critically, attending only to the negative aspects of performance leading to feelings of failure and limited satisfaction; which results in negative affect and increased stress (Hewitt, et al., 1996).

The relationship between perfectionism and stress is evident, however causation is unclear; due to studies using cross-sectional and correlational designs. Perfectionism has been found to be a mediating factor for stress in a number of studies and has been shown to have an impact on anxiety and negative affect (Flett, Hewitt, Blankstein, & Mosher, 1995; Flett, Hewitt & Hallet, 1995; Hewitt & Flett, 1993).

Fry (1995) found perfectionism was a significant moderator of stress in female executives and as stress increased, there was a decline in self esteem alongside an increase in negative physical health symptoms in those with higher levels of perfectionism. This is supported by later studies where perfectionism was found to have an impact on negative affect and stress levels in both young and middle aged adults (Chang, 2000) and that level of stress mediated the relationship between psychological wellbeing and perfectionism (Chang, 2006).

Comparatively, research has also shown support for stress as a mediating factor between perfectionism and psychological functioning. Chang, Banks and Watkins (2004) tested this model and considered racial differences using a sample of black and white women. Maladaptive perfectionism was associated with higher levels of stress and negative affect in both black and white women. Stress was found to fully mediate the relationship between perfectionism and psychological functioning in three out of four cases in the sample of Black females and one out of four cases in the sample of White females. The remaining three cases for the white females, stress partially mediated the association between perfectionism and psychological functioning. The results of this study offer support for the stress-generation hypothesis (Hewitt, et al., 1996).

Perfectionists appear to have more negative reactions to stressors. An early study examining the relationship between perfectionism and reactions to stress found those high in perfectionism (specifically, concern over mistakes) reacted with negative affect, low confidence and a sense of not doing well enough when exposed to a stressful task in comparison to an easy task (Frost, et al., 1995). Perfectionists engaging in challenging tasks also show prolonged physiological reactions, such as elevated blood pressure (Besser, Flett, Hewitt & Guez, 2008) and chronic headaches (Bottos & Dewey, 2004). The tendency for perfectionists to react negatively (emotionally, physically, cognitively and behaviourally) to challenges and perceived failures could be explained by the comprehensive stress processes framework, proposed by Hewitt and Flett (2002), which attributes the development of psychopathology to the combination of perfectionism and several stress mechanisms (e.g., stress generation, stress anticipation, stress perpetuation and stress enhancement). Perfectionists are hypothesised to have heightened levels of stress reactivity as they experience stressors as examples of personal failure; leading to more negative reactions to the stressor (Hewitt & Flett, 2002).

This hypothesis was tested by Flett, Nepon, Hewitt & Fitzgerald (2016) who found perfectionism was positively associated with stress reactivity to failure and that stress reactivity was positively correlated with symptoms of depression. Within this study, the role of perfectionistic cognitions was examined and found

to be associated with prolonged reactivity to stress. This suggests that perfectionists are likely to react to stressors when perfectionistic cognitions are more salient.

The empirical evidence supports the hypothesis that high levels of perfectionism lead to more severe negative affect by life stressors impacting on levels of anxiety and psychological wellbeing (D'Souza, et al., 2011). Implications of these findings suggest that interventions for those experiencing negative psychological functioning should target both the alleviation of stress and reductions in maladaptive perfectionism (Chang, Banks & Watkins, 2004). Perfectionistic cognitions were also found to be associated with depressive symptoms suggesting that interventions targeting perfectionism and stress should also target the automatic thoughts regarding being perfect (Flett, et al., 2016).

As mentioned, from the available evidence, it is not possible to conclude that perfectionism leads to greater stress, only that the two variables are related. Consideration must be given to a more developmental perspective whereby a child with greater stress reactivity may develop perfectionistic tendencies as a means to controlling their reactions (Flett, et al., 2016).

1.3.4 Impact of perfectionism on treatment for psychopathologies

Evidence suggests that perfectionism impedes treatment outcomes for Axis 1 disorders. Blatt, Quinlan, Pilkonis and Shea (1995) examined the impact of Need for Approval and Perfectionism characteristics on treatment outcomes for depression and found that perfectionism was a significant predictor of negative outcomes across four different treatment conditions. The treatment conditions included cognitive behavioural therapy, interpersonal therapy, psychopharmacology and clinical management and placebo control group and clinical management; this suggests that high levels of perfectionism impede treatment outcomes regardless of whether the treatment is psychological, pharmacological or a placebo.

Perfectionism has been shown to interfere with individual's ability to engage in therapeutic tasks such as exposure and response prevention, and cognitive restructuring in OCD (Frost, Novara & Rheume, 2002). Chik, Whittal & O'Neill (2008) examined the relationship between perfectionism and treatment outcomes for OCD across four conditions; individual cognitive therapy, group cognitive therapy, individual exposure and response prevention and group exposure and response prevention. Results showed that high scores on the doubts about actions subscale of perfectionism was associated with less change in OCD symptom severity post-treatment, however overall perfectionism and concern over mistakes was not found to be associated with treatment outcome. Other research has found that perfectionism does not impact on treatment outcome for anxiety disorders. Rosser, Issakidis and Peters (2003) found no associations between perfectionism and treatment outcome for social anxiety.

The rigid beliefs of perfectionists may be responsible for interfering with treatment progress (Shafran & Mansell, 2001; Whittal & O'Neill, 2003). CBT focuses on addressing dysfunctional thoughts and assumptions and if these cannot be altered due to the strength of beliefs in perfectionists then this may impede treatment. This suggests that treatments which do not emphasise altering thoughts may be more beneficial for perfectionists.

The evidence presented supports the notion of perfectionism as transdiagnostic, supporting the contention that perfectionism should be targeted as a standalone construct and by providing treatment for perfectionism, this can also lead to reductions in symptomology for other psychopathologies (Egan, Wade & Shafran, 2011).

1.4 Treatment for perfectionism

The development of the model of clinical perfectionism which utilises a cognitive behavioural analysis of perfectionism (Shafran, et al., 2002, 2010) has led to increasing research into the utility of CBT for perfectionism. Other treatments are yet to receive empirical attention.

Evidence for the efficacy of CBT for perfectionism has been examined in single case experimental design (SCED) series with mixed results. Ferguson and Rodway (1994) used a SCED series to investigate the effectiveness of CBT for perfectionism and found positive results; concluding that the CBT intervention led to a reduction in perfectionism. This study was among the first of this design to investigate CBT for perfectionism and details of the treatment provided to participants and the length of baseline prior to intervention were not included in the report. Additionally, clinically significant change was not calculated making it difficult to conclude the effectiveness of the intervention (Egan & Hine, 2008). A later SCED examination of CBT for perfectionism in nine participants with anxiety or depression provided this detail and found that participants demonstrated clinically significant improvements in perfectionism, with three participants also showing clinically significant reductions in symptoms of depression (Glover, Brown, Fairburn & Shafran, 2007). Egan and Hine (2008) employed an A-B multiple baseline design SCED utilising weekly measures to provide visual analysis of trends in the data and found reductions in perfectionism across all participants in the study, with two out of four participants demonstrating clinically significant decreases in perfectionism. In contrast to previous studies, Egan and Hine (2008) report no clinically significant changes in anxiety or depression symptoms following the intervention.

A benefit of conducting SCED research is the opportunity to use visual analysis to report on where changes may occur over the course of treatment. This provides researchers with information regarding potential mechanisms of change which can be used to further improve interventions. The studies reported here have not considered this within the reporting of their results therefore making it difficult to ascertain which elements of the CBT interventions may have effected change.

Randomised controlled trials (RCT) have also been utilised to investigate the efficacy of CBT for perfectionism. An RCT comparing CBT for perfectionism with a waitlist control group demonstrated clinically significant changes in perfectionism and significant improvements in anxiety and depression symptomology for participants in the CBT group (Riley, Lee, Cooper, Fairburn &

Shafran, 2007). Similar results have been found in an RCT examining group CBT as an intervention for perfectionism (Handley, Egan, Kane & Rees, 2015) which demonstrated significant reductions in perfectionism, psychopathological symptoms and increase in self esteem at post-intervention and six month follow up.

Arpin-Cribbie, Irvine and Ritvo (2012) employed a web based CBT approach as an intervention for perfectionism in a student sample. The aim of the intervention was to attempt to modify beliefs related to perfectionism. They compared results with participants completing a web based general stress management programme and a no treatment group. It was found that the perfectionism intervention group scored significantly lower on measures of perfectionism and distress following the intervention. There were also differences in the general stress management group but these were fewer (on 4 out of 10 measures compared with 9 out of 10) than the perfectionism group. The no treatment group demonstrated no significant differences in scores. Interestingly scores on the Beck Anxiety Inventory that were taken pre- and post- intervention were not significantly different. Evidence clearly indicates a link between perfectionism and anxiety and it appears that the CBT intervention was ineffective in this area. Whilst these findings are statistically significant, the evidence of clinical change in the participants is minimal (Arpin-Cribbie et al., 2012) with many still scoring higher than the normative sample on levels of perfectionism, depression and anxiety bringing into question the clinical significance of the results.

The empirical evidence offers support for CBT as an effective intervention for perfectionism with varying impacts on associated psychological distress and psychopathology. The research, however, is currently lacking in consideration of mechanisms of change for perfectionism and associated distress and other models of treatment are yet to be investigated. The CBT model focuses on the maintaining factors of perfectionism, such as selective attention and cognitive biases (Hollender, 1965) and these could be targeted in alternative ways to the traditional CBT methods which may yield positive results for both reductions in perfectionism and in psychopathological symptoms.

1.5 Gender differences in perfectionism

Much of the research into perfectionism has been limited in assessing gender differences due to the large difference in sample sizes for men and women. However, some research has highlighted potential gender differences.

Research predominantly shows no gender differences in overall perfectionism scores (Stoeber & Stoeber, 2009) however some differences have been found on specific domains within perfectionism. Hewitt and Flett (1991) found that men scored higher on measures of other oriented perfectionism than women. This is replicated in later research by Hill, Zrull, & Turlington (1997). Other oriented perfectionism relates to the expectation of others to meet high standards and has not been consistently significantly associated with distress or rumination within the literature (Flett, Madorsky, Hewitt, & Heisel, 2002).

Flett, Blankstein, Hewitt, and Koledin (1992) found self oriented and socially prescribed perfectionism were associated with fear of failure in women but not men, but that there was a stronger association between perfectionism and procrastination amongst males. In contrast, Kawamura, Hunt, Frost and Dibartolo (2001) found no significant differences between men and women on the domains of perfectionism and no significant differences in correlations between perfectionism and distress. Research employing the FMPS has found mixed results regarding gender and perfectionism. Stoeber (1998) found that male and female participants differed significantly only on the Parental Expectations subscale with women scoring higher ($M=12.11$) than men ($M=10.56$). However, Stallman and Hurst (2011) found significant differences in Organisation and Personal Standards with women scoring more highly on these subscales. This result should be treated with caution as the difference for Organisation had only a small effect size and the personal standards result was not clinically significant.

Comparison of gender differences across student and clinical samples have also shown no significant differences between genders (Hewitt & Flett, 1991). However, some research has found greater relationships between perfectionism and distress amongst women than amongst men. Socially prescribed

perfectionism has been associated with socially distant characteristics for men and interpersonal difficulties and distress for women (Hill, Zrull, & Turlington, 1997).

The literature implies that responses to perfectionism may differ between the genders. Emotion focused coping has been significantly associated with perfectionism amongst males but not females (Hewitt, Flett, & Ediger, 1995) and significant associations have been found between maladaptive perfectionism and avoidant coping in male university professors; but not with female counterparts (Dunn, Whelton, & Sharpe, 2006). Additionally, male college students scoring highly in perfectionism were found to be more avoidant of problems and impulsive in emotional reactions than female college students (Park, Heppner, & Lee, 2010).

The literature regarding gender differences in perfectionism is varied. Within this study, all the participants were female. The recruitment process did not specifically target women nor did it display any discrimination towards men. It is important to consider this limitation to the study, however there is evidence that gender differences are minimal in perfectionism, although this is not necessarily true of response to treatment for perfectionism.

1.6 Acceptance and Commitment Therapy (ACT) and perfectionism

This section outlines what is meant by ACT, the theory underlying it (Relational Frame Theory) and how the therapeutic process of ACT might support individuals with perfectionism. ACT aims to use the process of mindfulness and behaviour change to increase psychological flexibility (Fletcher & Hayes, 2005).

1.6.1 Relational Frame Theory

ACT is a third wave CBT approach which is grounded in Relational Frame Theory (RFT; Hayes, Barnes-Holmes & Roche, 2001). RFT is a behavioural account of human language and cognition (Hayes, Barnes-Holmes & Roche, 2001), grounded in functional contextualism (Hayes, 2004).

A core notion of RFT is the ability of humans to derive mutual relations between stimuli under arbitrary contextual control (Fletcher & Hayes, 2005). Derived stimulus relations are a fundamental process within and specific to human language; they are relations that appear between stimuli without having been specifically learned (Torneke, 2010). Animals are able to develop relations when specifically trained to do so but they are unable to derive any mutual relations that are not specifically trained, that is, they can not apply their training to their own history and context to form further stimulus relations. As humans, we appear to do this universally, developing relational frames which impact our behaviour.

Relational frames are developed through three processes; (1) mutual entailment, (2) combinatorial mutual entailment and (3) transformation of stimulus functions.

(1) Mutual entailment

If an individual is directly trained (through repetition, reinforcement and experience) that the word 'dog' is related to the word 'bgung' (a nonsense word), when presented with the word 'dog' and asked to choose from a selection of nonsense words, they will choose the word 'bgung'. This is a directly trained relation. However, studies have shown that when such relations are developed, the capacity for human language means that when presented with the word 'bgung', the individual is more likely to then select the word 'dog' from a selection of words. The individual has learnt that 'dog' is related to 'bgung' and therefore 'bgung' is related to 'dog'. This process is called mutual entailment.

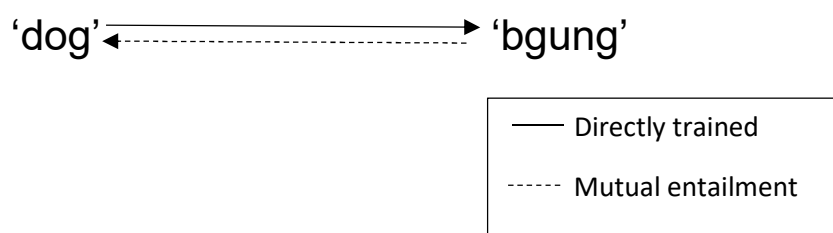


Figure 12. An example of mutual entailment

(2) Combinatorial mutual entailment

If the individual was then trained in the same way to choose the word 'craqua' (another nonsense word) when the word 'bgung' is presented, they again develop a relation between 'bgung' and 'craqua' and 'craqua' and 'bgung' through mutual entailment. However, further relations are derived from this through multiple mutual entailment. If 'bgung' is related to 'craqua' and 'bgung' is related to 'dog' then a relation between 'dog' and 'craqua' and 'craqua' and 'dog' is also developed.

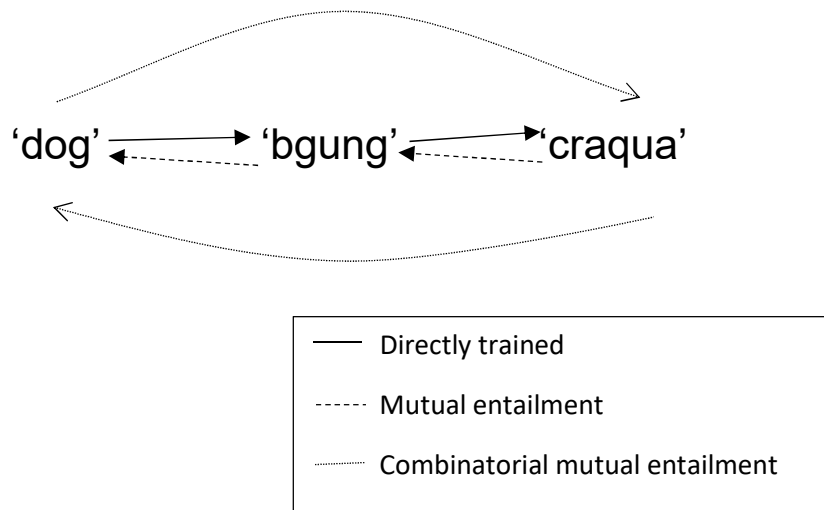


Figure 13. An example of combinatorial mutual entailment

(3) Transformation of stimulus functions

When derived stimulus relations become established, this can alter the function of a stimulus, which impacts on human behaviour (Torneke, 2010). The function of a stimulus is not inherent in the stimulus but is determined by the context and the individual's response to it; therefore, the same stimulus can have different functions (Torneke, 2010). An individual who has a fear of dogs, operantly learnt through their history and context, may demonstrate a fear response to the word 'dog'. As relations are derived through mutual entailment and combinatorial mutual

entailment, the same individual may begin to demonstrate a fear response to the words 'bgung' and 'craqua'. The word 'bgung' is a nonsense word, it therefore has no prior meaning or context to the individual, yet it can become a word which evokes fear and changes behaviour – the function of the word (stimulus) has been transformed through the derived stimulus relations.

These three processes combine to create a 'relational frame' which is then drawn upon under different contexts influencing an individual's behaviour in the presence of a particular stimuli. For example, if the person with a fear of dogs comes across the word 'bgung' they are likely to demonstrate a fear response as the relational frame indicates that 'bgung' is related to (by mutual entailment) 'dog' and 'dog' is something to be feared according to history and context.

1.6.2 RFT and Psychopathology

RFT is clinically relevant due to the influence of relational frames upon human behaviour.

According to RFT, psychopathology develops due to the inability of humans to differentiate between the process of thinking and the product of thinking due to the dominance of derived relations over other sources of behavioural regulation (Fletcher & Hayes, 2005). If an animal fears something, the natural instinct is to avoid that thing (stimulus). By avoiding it, the distress and fear associated with it subside. Due to the capacity for language in humans, the development of derived relations means that the fear becomes related not just to the specific stimulus but to other stimuli which previously did not elicit an emotional response (transformation of stimulus function). When these difficult emotional responses are associated with a number of situations, this can cause psychological distress. For example, the individual with a fear of dogs may see a dog whilst walking through a park. The operantly learned response of fear and avoidance of dogs, becomes related to the park through mutual entailment and this derived relation may lead the individual to develop a fear response to the park and potentially all parks. The function of the park has been

transformed and is now a place to be feared and avoided (transformation of stimulus functions). This link between language, derived relations and behaviour is supported by numerous studies (see Torneke, 2010).

Neuropsychological studies have shown that the same brain activity occurs when people derive relations as when they are engaged in language related activities (Barnes-Holmes, et al., 2004).

Relational networks develop through 'addition not subtraction' (Hayes & Strosahl, 2004) therefore it would be ineffective to attempt to rid a person of their mutually derived relations (Hayes & Strosahl, 2004). ACT works to target the relational networks by altering their behavioural function rather than trying to rid an individual of their already conditioned verbal relations (Hayes & Strosahl, 2004). The capacity for language and the development of mutually derived relations has a repertoire broadening effect in that it allows humans to develop problem solving and react quickly in different contexts (Hayes & Strosahl, 2004). This appears to become problematic when used in excess, for example rumination and/or when an individual attempts to control distressing relational frames. It is this more narrowing effect of language which results in psychological inflexibility which is the suggested cause of psychopathology. ACT refers to psychological inflexibility as the inability to adapt behaviours even when they are unhelpful or distressing as a result of psychological processes known as cognitive fusion and experiential avoidance (Hayes & Strosahl, 2004). Therefore, ACT attempts to increase one's psychological flexibility in order to change the function rather than the nature of the relational networks (Fletcher & Hayes, 2005).

1.6.3 Cognitive Fusion

The impact of thoughts on behaviours is a well established notion within psychological models of distress (e.g., Beck, 1979). Cognitive fusion refers to when thoughts are experienced indirectly rather than as a present moment experience (Fletcher & Hayes, 2005), for example when a person treats their thoughts about an event as being the same as the event itself, they are considered to be 'fused' with their thoughts, giving their thoughts the power to

alter their behaviour (Hayes & Strosahl, 2004). A person who is concerned about making mistakes, in the event of having to write an essay may exhibit procrastination as they believe their thoughts about getting it wrong and making a mistake (“I’ll make a mistake and fail it”) are what will happen rather than recognising the thoughts as a cognitive process occurring in the present moment. This fusion with thoughts has a narrowing effect causing the individual to act in accordance (procrastinate) with the verbal relations (“I will fail”) and the event (writing an essay) which can strengthen the relational frames further as the behaviour confirms the relational frame (Hayes & Strosahl, 2004). The person who procrastinates will either avoid completing the essay at all or leave themselves with limited time to complete it, thus, increasing the likelihood that they will fail.

Traditional CBT models of psychotherapy attempt to change or control ‘dysfunctional’ thoughts and negative cognitions (Beck, 1979). A key principle in ACT is that attempts to control unwanted experiences are ineffective and counterproductive. Wenzlaff and Wegner (2000) have said that trying to suppress, avoid or control thoughts leads to an upsurge in them in both frequency and intensity. When cognitive challenging has been the focus of research, it hasn’t always been found to be helpful (Jacobson et al., 1996; Longmore & Worrell, 2007) and in some subtypes of clients has been found to be harmful (Haeffel, 2010, cited by Hayes, Strosahl & Wilson, 2012). Within the ACT model, the greater attempt made to control thoughts, the more fused one will become with the thought (Hayes & Strosahl, 2004).

The emphasis in CBT models is on the thoughts being dysfunctional. For example, in anxiety, the CBT model refers to individuals experiencing threat related cognitions in the absence of danger. ACT doesn’t consider whether a thought is right or wrong, the focus is on whether it is helpful to the individual (Harris, 2009). This is important with perfectionism as perfectionists are already highly self critical and suggestion that their thinking is faulty may be counterproductive.

1.6.4 Experiential avoidance

Experiential avoidance, where relations become attached to internal events leading to predictions and attempts to regulate and avoid unpleasant internal events even when it is harmful (Fletcher & Hayes, 2005), is another contributor to psychological inflexibility. From an RFT perspective, avoidance and suppression increase distress as the avoidant behaviours sit within the same relational frame as the feared event (Hayes, et al., 2004).

If individuals are engaging in task avoidance, CBT would consider exposure an appropriate behavioural intervention. This has been shown to work for a range of disorders. Proponents of the ACT model view this differently and consider exposure to be a form of tolerance rather than acceptance (Harris, 2009). Within ACT, true acceptance means that unwanted experiences will not cause distress – although they will still be there and may be unpleasant (Hayes, et al., 2012). In the ACT model, tolerance means that you are still struggling with the unwanted events and therefore miss out on the fulfilment of the experience. The aim in ACT is to bring behaviour in line with values (Harris, 2009).

1.6.5 The ACT processes, perfectionism and associated distress

The goal of ACT is to bring behaviours in line with values to enable individuals to live meaningful and fulfilling lives (Hayes & Smith, 2005). Evidence suggests that the ACT processes also have a positive effect on distress, despite this not being a primary goal. A review of outcomes in ACT research found several studies showed that greater psychological flexibility was related to a lower probability of suffering psychological distress (Hayes, Luoma, Bond, Masuda & Lillis, 2006). Improvements in levels of distress may be a result of breaking the avoidance cycle, increased contact with the present moment and acceptance of distressing private events. Within the ACT model, six core processes (see figure 14) are used to support exposure to unwanted and avoided private events through the use of acceptance and cognitive defusion strategies and encouraging behaviour change through value directed action. These processes are intertwined; no one process is more important than the others (Hayes, et al., 2012).

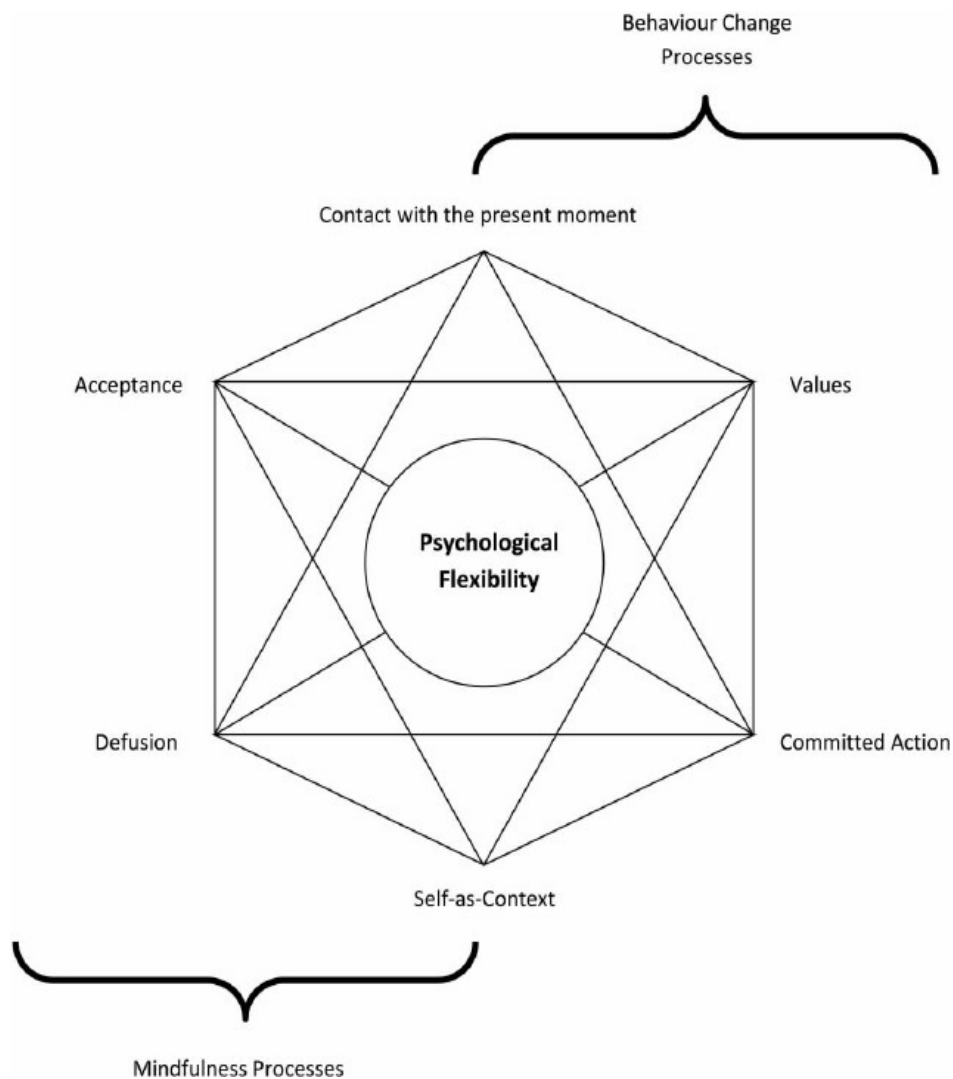


Figure 14. Psychological flexibility hexaflex showing the six ACT processes impacting on psychological flexibility (Hayes, et al., 1999).

- **Acceptance** - Acceptance, in ACT, does not suggest that individuals should accept the distressing cognitive content that arises, but that noticing it and being aware of how such content encourages avoidance and maintains the distress associated with it (Hayes, et al., 2012). Clients undertaking ACT are made aware of the effect of attempting to avoid and control their unwanted experiences which leads to experiential avoidance, and are encouraged to become aware of their private events as they arise. ACT teaches clients that they can experience distressing private events without coming to harm.

- Defusion - When an individual becomes fused with their thoughts, behaviour becomes guided by thinking and cognitive/verbal processes and direct experience can not be discriminated (Hayes, et al., 2012). To counter this, ACT attempts to bring fusion under contextual control by teaching clients to separate the 'mind' (cognitive processes) from the 'human' through experiencing verbal/cognitive events as what they are (Hayes, et al., 2012). Cognitive defusion techniques use experiential exercises to encourage an individual to view their private events as a process of relating and a process in the moment (e.g., a thought is just a thought) and not as a distressing result of the process that needs to be controlled or avoided. For example, encouraging repetition of a distressing thought until the words lose meaning and can be viewed merely as sounds being made.
- Self-as-Context - The conceptualised self is the construction in an individual's mind of verbal categorisations and self evaluations which provide a story of who the individual is and provide justifications for their actions, for example "I am a perfectionist". Fusion with one's conceptualised self narrows an individual's repertoire of actions by interpreting events to fit with the conceptualised self (Hayes, et al., 2012), which restricts the process of ongoing self awareness (Hayes & Smith, 2005). ACT teaches clients to recognise the stories they have about themselves and to separate the story from the individual.
- Present moment awareness - The present moment refers to the here and now, which is where acceptance, defusion and value directed behaviour can occur. It involves the purposeful allocation of attention (Hayes, et al., 2012). Rumination and worry, maladaptive thought styles associated with perfectionism, narrow attention to the present moment. In ACT, clients are trained in mindfulness based practices where they learn to

notice private events and physical sensations within the present moment. Large effect sizes have been found for individuals diagnosed with anxiety and mood disorders who have undertaken mindfulness based training (Hofmann, Sawyer, Witt & Oh, 2010). Individuals found to be high in mindfulness have shown significantly lower levels of perfectionism and distress (Short & Mazmanian, 2013).

- Values - Cognitive fusion and experiential avoidance impair the ability to follow valued direction (Hayes, Strosahl & Wilson, 2012). Within ACT, clients are encouraged to identify their values and focus on overt behaviours that can be regulated rather than focusing on private events which can not be controlled
- Committed Action - When values have been identified, clients set goals to help them down their 'valued path' and make changes to overt behaviours to be in line with the values they identified.

1.6.6 ACT and perfectionism

ACT techniques are more experiential due to the underlying contextualist philosophy (Hayes, 2004). When applied to perfectionism, the ACT processes could offer an explanation of the development and maintenance of perfectionistic tendencies. A core concept in the understanding of perfectionism is rigidity and inflexibility in thinking and behaving. The ACT model focus on increasing psychological flexibility therefore seems an appropriate consideration for treatment. Hayes, et al. (2012) posit that as skills in ACT develop, it can develop one's view of themselves and others as part of an interconnected world. ACT postulates that increasing psychological flexibility can undermine unhelpful verbal representations of experience. By increasing present-moment awareness and promoting action consistent with values, psychological flexibility is enhanced which can undermine those unhelpful representations (Hayes, et al., 2012). It combines acceptance strategies with traditional behavioural

interventions (McCracken & Vowles, 2014). In short, ACT aims to “maintain purposeful behaviour, even in the presence of unwanted experiences” (Hayes et al., 2012). This is particularly important for perfectionists as we don’t want to change the striving behaviour, we want to bring it in line with their values. The cognitive content regarding failure may still be present, but purposeful value based behaviour can still occur.

Teasdale et al. (2001) indicated that an increase in metacognitive awareness is what leads to therapeutic gain. Metacognitive awareness is where negative thoughts and feelings are experienced as mental events rather than as of the self. This is similar to the concepts described by ACT. ACT is considered a “third wave” CBT and therefore uses ideas and strategies from CBT but places emphasis on changing the context in which cognitions are experienced rather than changing the content. ACT has an existential element not present in traditional CBT and places emphasis on identifying the core values important to the individual and using these to guide behavioural change (Harris, 2009).

There is much less evidence for the effectiveness of ACT for psychopathology than there is for CBT. However, whilst CBT has been shown to be effective for a range of psychopathology, it has been shown to be ineffective in some specific areas, for example, in chronic depression and depression with personality disorder symptoms (Fournier et al., 2009); perhaps considered the more complex clinical presentations due to having multi-dimensions like perfectionism.

ACT highlights some processes that are not covered within standard CBT including experiential acceptance, mindfulness and values (Forman et al., 2007). Working on values could be an important area for perfectionism as perfectionists often measure their self worth against achievement. Egan, Wade & Shafran (2011) suggest it is not necessarily the striving behaviour which is problematic but the appraisal of what failing to meet the standards means to the individual. Cognitive defusion techniques and a focus on values could support perfectionists to look at their world from a different perspective, perhaps recognising the effort made (the striving behaviour) which is in line with their

values rather than the overall result (inevitable failure due to standards being unachievable).

1.6.7 Evidence for the ACT model

Six meta-analyses (Hayes, et al., 2006; Ost, 2008, 2014; Powers, Vording, & Emmelkamp, 2009; Ruiz, 2012; Smout, Hayes, Atkins, Klausen & Duguid, 2012; A-tjak, et al., 2015) have been conducted to investigate the effectiveness of ACT across a range of clinical presentations and results have been mixed.

Medium effect sizes have been found at post-treatment following ACT interventions (Hayes, et al., 2006) and large effect sizes have been found for ACT interventions when compared with waiting list control groups, treatment as usual or placebo treatments (Hayes, et al. 2006; Powers, et al. 2009; Tjak, et al., 2015)

Ost (2008, 2014) completed two meta-analyses and reported in his second (2014) that there had been a deterioration in effect size in ACT intervention studies. From this, Ost (2014) concluded that ACT is not empirically established for use with any clinical presentation. Conversely, Smout, et al. (2012) concluded that ACT interventions are effective across a range of difficulties.

Despite the lack of clarity from these studies regarding the efficacy of ACT, it has been recognised as an empirically supported treatment by the American Psychological Association (APA, 2006).

1.6.8 Critique of the ACT model

In this section, the ACT model is evaluated using the recommended common criteria for evaluation of a theory or model of behaviour change (Prochaska, Wright and Velicer, 2008; Sharf, 2015).

Clarity:

Precision and clarity are considered key concepts of theories and models (Sharf, 2015). For a model to be considered clear and parsimonious, it must be deemed understandable with specific key concepts and internal consistency. ACT considers the role of language in the development and maintenance of behaviour (Hayes, 2004), yet, as a model, it uses complex and unfamiliar language. Some research has shown that participants in ACT interventions find some of the language difficult to understand (Johnston, Foster, Shennan, Starkey & Johnson, 2010) which may have an impact on participant's ability to engage with the model and make use of the interventions being presented. Feedback from participants within the present study supports this, with most participants expressing some difficulty with the language at some stage during the study. ACT could therefore be criticised for being too complex and lacking in clarity.

Precision and testability:

Concepts within a model must be operationally defined and measurable, providing testable hypotheses to be considered precise and testable. Testability is highlighted as paramount for a model. There should be evidence of its effectiveness (Sharf, 2015). The ACT processes are clearly defined within the model and the relationship between the processes is clear. Measures are available for each of the ACT processes although these are not without criticism. The recent development of the Comprehensive Assessment of Acceptance and Commitment Therapy Processes (CompACT; Francis, Dawson, & Golijani-Moghaddam, 2016) measure demonstrated that experts were unable to agree on items which related to the measurement of the self-as-context process indicated in the ACT model (Francis, et al., 2016). Additionally, some measures are criticised for being measures of problems (symptoms) rather than measures of process. This inconsistency in measurement brings question to the testability of the model. The compACT was developed to attempt to measure psychological flexibility as a whole construct as well as each of the ACT processes. The processes within this measure have been collapsed down into three dyadic components; openness to experience, valued

action and behavioural awareness. If it is possible to measure ACT as only three constructs rather than the six processes, the precision of the model may need further development. There is also some overlap between ACT concepts and those of other models such as CBT. Cognitive defusion, for example, has been argued to be akin to metacognitive processing in CBT; casting further doubt on the precision of ACT as a model.

Empirical adequacy:

When a model can account for the empirical evidence, predictions on the model are considered accurate and the model processes are empirically validated then the model is deemed to have empirical adequacy. As the ACT model evidence base is still in its infancy, the empirical evidence is currently mixed (Hayes, 2002). Some evidence highlights the effectiveness of ACT however there is argument that there is a large number of non-empirical studies making claim to the effectiveness of the model in comparison to the number of empirical studies (Corrigan, 2001). This is refuted by Hayes (2002) who argues that the proportion of non-empirical studies compared with empirical studies does not speak to the effectiveness of the model. A meta-analysis of ACT compared with CBT, conducted by Ost (2014), stated the evidence for the model is weak with a lack of evidence for the processes and mechanisms of change within the model.

Comprehensiveness and generalisability:

This is where a model is considered holistic and can be applied across contexts and clinical phenomena. The more comprehensive a theory/model is, the more applicable it will be, albeit also more vulnerable to error (Sharf, 2015). Research indicates that the ACT model can be viewed as transdiagnostic as it can be applied to a broad range of difficulties as it is argued that experiential avoidance is at the root of human suffering (Hayes, 2004; Hayes & Lillis, 2012). The processes of change in ACT remain stable and do not differ across diagnosis or difficulty.

Utility and applied value:

This criterion considers whether a model provides a useful framework for practice and whether the interventions based on the model are effective solutions to difficulties. ACT interventions have shown effectiveness for a broad range of difficulties and populations (Hayes, Masuda & De Mey, 2003). ACT has shown utility with diverse populations (Hayes & Lillis, 2012) and with minority groups (Muto, Hayes & Jeffcoat, 2011).

1.7 Efficacy of self help interventions

Self help interventions are considered cost effective and resource efficient (Butryn, et al., 2011), they are widely accessible (Mains & Scogin, 2003) and promote self efficacy. They have been criticised for lacking in therapist – client contact (Botella, Garcia-Palcios, Banos & Quero, 2009; Teasdale, Williams, & Segal, 2013); a critical component considered in the common factors literature (Grencavage & Norcross, 1990). However, self help intervention recovery rates have been demonstrated as comparable to therapist led interventions for some disorders (e.g., eating disorders) (Sysko & Walsh, 2008). Egan, et al. (2014) compared pure self help CBT for perfectionism with face to face CBT for perfectionism and a waitlist control group. Both the self help and face to face groups were found to be effective in reducing perfectionism, however the self help intervention did not lead to significant effects on anxiety, depression, stress or self esteem, unlike the face to face intervention. Additionally, large effect sizes were found in the face to face condition whereas effect sizes were small to moderate in the self help condition (Egan, et al., 2014). This suggests that a self help CBT intervention for perfectionism may be effective in improving perfectionism (albeit not as effective as face to face treatment) but may not have an impact on any associated distress or psychopathology.

Despite these potential benefits, research into self help interventions receives less attention than therapist led interventions and studies available utilise a range of self help formats and sample populations meaning the information regarding how or when self help interventions are most effective is inconclusive (Newman, Erickson, Przeworski & Dzus, 2003).

The evidence base for ACT as an intervention for numerous difficulties is growing (Ost, 2008). A review of outcomes in ACT research found several studies showed that greater psychological flexibility was related to a lower probability of suffering psychological distress (Hayes, Luoma, Bond, Masuda & Lillis, 2006). There has been much less research investigating the efficacy of self help ACT interventions.

A review of the extant literature found that self help ACT interventions were more beneficial than treatment as usual for a range of psychological health difficulties (Cavanagh, Strauss, Forder & Jones, 2014). Cavanagh, et al. (2014) reviewed 15 RCT's utilising mindfulness and acceptance based interventions in a self help format to evaluate the effectiveness of such interventions in reducing anxiety and depressive symptomology and increasing levels of acceptance and mindfulness. Significant reductions in symptoms of depression and anxiety and significant increases in mindfulness and acceptance were evident across clinical and non-clinical populations compared with control groups. Guided self help is argued to be more effective for therapeutic change by some researchers (e.g., Richards & Richardson, 2012) however the differences between them have not been demonstrated as significant in all studies therefore this argument needs further investigation. Within Cavanagh, et al.'s (2014) review, studies using a guided self help format were included as well as those considered 'pure' self help. Larger effect sizes were demonstrated for interventions which included therapist support (guided self help). This is mirrored in perfectionism research examining self help interventions. Pleva and Wade (2006) examined outcomes for participants following either a guided self help intervention for perfectionism or a pure self help intervention for perfectionism. Both modes of delivery were found to be effective in reducing perfectionism however participants in the guided self help condition showed greater symptom improvement than those in the pure self help condition. Therapeutic relationships are associated with treatment outcomes (e.g., Lambert & Barley, 2001) which may explain this difference in effect size across the two modalities.

The results of this review offer support for the utility of ACT interventions in a self help format, however the small number of studies and the variety of formats included within them mean it is not possible to conclude that all ACT self help

interventions are effective (Jeffcoat & Hayes, 2012). In addition, mechanisms of change within the interventions were not assessed, making it difficult to draw conclusions regarding the effectiveness of such interventions. Further research is warranted to assess the effectiveness of ACT interventions in a self help format.

As a result of this review, Cavanagh et al. (2014) concluded that investigation into the relationship between specific ACT processes and outcomes is warranted. The present study employed repeated measurement of the ACT processes and outcome measures throughout the self help intervention to enable exploration of the potential mediating role of the ACT processes. The study utilised a guided self help format to support participants' engagement with the self help materials as engagement has been associated with positive outcomes (Cavanagh, et al., 2014). The guided element of the intervention involved daily contact with participants via a text message and weekly telephone support.

1.8 Clinical relevance

As discussed throughout this section of the report, perfectionism has been associated with a number of psychological and physical health difficulties. Despite a lack of consensus regarding a definition of perfectionism and the elements which make up this construct, the extant literature agrees that those with higher levels of perfectionism report higher levels of psychological distress. High levels of perfectionism have also been found to impede treatment for psychological difficulties (e.g., Blatt, et al., 1995) suggesting that interventions targeting perfectionism as well as psychological distress may be of benefit. To date, interventions for perfectionism have focused solely on cognitive behavioural therapies which have yielded positive changes in levels of perfectionism. The transdiagnostic nature of perfectionism suggests that targeting perfectionism may enable the efficient treatment of numerous psychological difficulties (Howell, et al., 2016) however results regarding significant changes in distress following CBT for perfectionism have been mixed. Therefore, further investigation into interventions which impact on both

perfectionism and the associated distress is warranted in order to investigate the most clinically effective and resource efficient method of treatment. Acceptance and commitment therapy may be a viable alternative to CBT for perfectionists.

CBT highlights the role of dysfunctional thinking in the maintenance of perfectionism and attentional bias to negative perfectionism related information has been demonstrated in those high in perfectionism (Shafran, Cooper & Fairburn, 2002; Howell, et al., 2016). Cognitive restructuring techniques are employed within CBT to attempt to alter dysfunctional thinking based on the assumption that alterations in underlying cognitive structure will affect mood and behaviour patterns (Beck, 1979). The evidence for the effectiveness of cognitive restructuring is not conclusive and some have argued that cognitive elements of therapies are superfluous (see Longmore & Worrell, 2007). An exploratory study aiming to evaluate cognitive restructuring techniques found a reduction in levels of perfectionism following a cognitive restructuring intervention (Ferguson & Rodway, 1994). It is not possible to conclude that improvements in perfectionism were solely the result of the intervention however, as no comparison/control group was employed within the study. Additionally, no statistical analyses were conducted, it is therefore unknown whether reported changes were reliable or clinically significant. DiBartolo, Frost, Dixon and Almodovar (2001) examined the impact of cognitive restructuring on evaluations related to a speech task in participants with high levels of perfectionism (specifically, concern over mistakes) and found a significant increase in reported ability to cope with a speech task and significant decreases in anxiety symptoms following the cognitive restructuring intervention. Within this study, a Speech Related Concerns Questionnaire was utilised which required participants to rate how bothered they were by particular thoughts or feared outcomes related to giving a speech (e.g. “making a ton of mistakes”). Results showed that participants high in perfectionism were more bothered by thoughts and feared outcomes during the speech task which was completed after the cognitive restructuring training. The cognitive restructuring intervention did not appear to alleviate the impact (bother) of these thoughts. This is in line with other research which has suggested that attempts to change

or control negative thoughts can lead to an increase in such thinking (Wenzlaff & Wegner, 2000). An ACT understanding of perfectionism would also acknowledge the relevance of distressing thoughts related to performance evaluation and self criticism, however ACT interventions aim to alter the function of the cognitive content rather than attempting to change the content itself. This is hypothesised to create distance between an individual and their private events leading to increased psychological flexibility (Hayes, Strosahl & Wilson, 2012). A secondary impact of ACT interventions is a reported reduction in distress (Hayes & Wilson, 2004). Therefore, the emphasis placed on acceptance of unwanted private events (thoughts, feelings, bodily sensations) and value driven behaviour may be of benefit to perfectionists.

It has long been suggested that individual differences play a role in effectiveness of therapeutic interventions. Beutler (1979) conducted a comparative analysis of studies into therapeutic interventions and concluded that different clients will demonstrate different responses to therapies therefore examination of particular processes and mechanisms of change are paramount for the development of effective therapies.

The present study aims to contribute to the understanding of perfectionism and ACT. There is limited research on how or why ACT works and currently no evidence for ACT as an intervention for perfectionism. The study also enables an examination of the efficacy of ACT as a self help intervention which will enable the intervention to be more widely accessed. If ACT is discovered to be an effective treatment for perfectionism, this would support the use of self help ACT in a variety of environments alongside in clinical practice. This has important clinical implications for those with difficulties in perfectionism. The availability of self help materials would allow schools, universities and GP surgeries to have an intervention readily available for those they suspect are struggling due to perfectionism.

Due to the transdiagnostic nature of perfectionism, ACT may be a viable intervention for perfectionists as it addresses the processes common among a range of disorders (Clarke, et al. 2014). Consideration of individual processes and mechanisms of change has been neglected both in perfectionism research

and studies investigating the efficacy of ACT interventions therefore a single case experimental design approach has been utilised in the present study to enable exploration of this.

2. Extended Method

This section expands on the methodology employed in the present study with consideration given to the study sample and rationale for the study design and outcome measures chosen.

2.1 Single case experimental design (SCED)

Single case experimental design (SCED) is a method employed to demonstrate treatment efficacy (Rassafiani & Sahaf, 2010). SCED's are an alternative to group comparison study designs and the focus on the individual means smaller sample sizes are required. The use of multiple subjects enables examination of cause and effect if change is observed across participants (Backman, Harris, Chisholm & Monette, 1997). The SCED method reduces the chance that change can be attributed to confounding variables and allows examination of individual level change through the collection of detailed time series data (Rassafiani & Sahaf, 2010). The collection of this rich data is advantageous for the current study as it allows exploration of the impact of the intervention on the individual ACT processes (psychological flexibility), perfectionism and distress for each individual participant.

A multiple baseline design was used in the current study. The typical ABA SCED design was not appropriate as the learning taking place during the intervention phase of the study is cumulative and cannot be unlearned therefore demonstrating the practical limitation of such a design (Rassafiani & Sahaf, 2010). The multiple baseline design does not require the removal of treatment yet still allows the investigation of a causal relationship. As treatment could not be withdrawn and participants began the study at different times, it was recognised that a multiple baseline design would be most appropriate in allowing examination of the effects of a staggered ACT intervention on

measures of psychological flexibility, perfectionism and distress. Within this design, all participants complete a ‘no treatment’ phase where the same behaviours are measured repeatedly in order to establish a baseline. Participant baseline phases are staggered in the present study and each individual’s baseline data acts as their own control, therefore, any change in the behaviours within the treatment phase can be attributed to the intervention. Once a stable baseline has been achieved, the intervention phase begins whereby the same behaviours continue to be repeatedly measured throughout. If the same change is observed across multiple participants, this strengthens the inferences made regarding the change being due to the treatment. Additionally, as each participant begins the intervention phase at a different time, this reduces any threat to internal validity (e.g. maturation effects) (Barlow, Nock, & Hersen, 2008).

In the current study, the intervention phase was split into six stages to work in accordance with the six ACT processes under examination. This allowed inferences to be made regarding which ACT processes may have influenced changes in outcome measures.

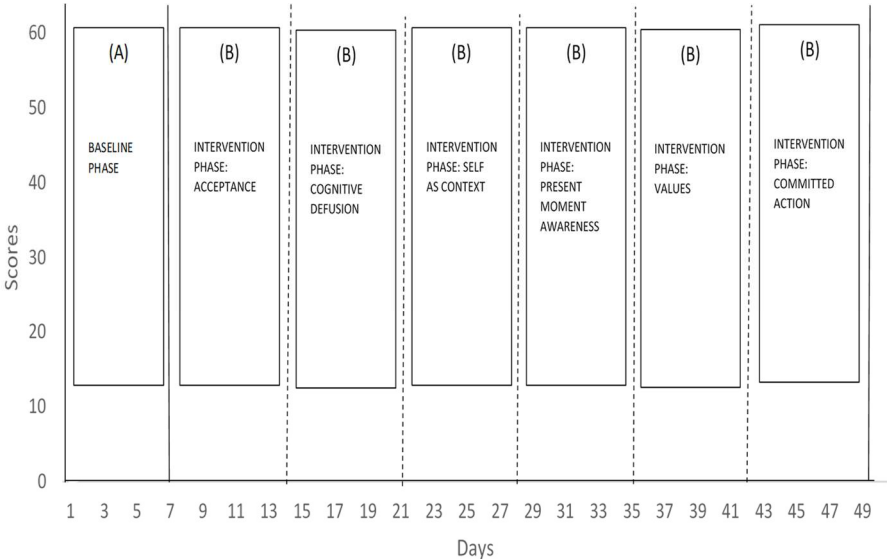


Figure 15. The phases of the SCED employed in the present study

Whilst RCT's are considered the gold standard for examining the efficacy of interventions, there are limitations in their design, specifically the failure to examine individual outcomes (Davies, Howells, & Jones, 2007). To overcome this limitation, the use of SCED methodology was chosen. SCED's allow examination of processes on an individual level (Guadiano, 2011) and there is suggestion within the extant ACT literature that attention is needed to examine the specific ACT processes and how these bring about change (e.g., Cavanagh et al., 2014). The present study was interested in the potential mechanisms of change for psychological flexibility, perfectionism and associated psychological distress. The CBT model of perfectionism was developed to support treatment of perfectionism within clinical practice and it is therefore important to consider the clinical implications of ACT for perfectionism. SCED's are considered important to the contemporary role of clinical psychology, that is, the scientist practitioner model; they provide information for evidence based clinical practice (Bloom, Fisher, & Orme, 2003) and generate new hypotheses related to developing interventions (Turpin, 2001).

A strength of SCED research is the allowance of examination over time and repeated measurement of target variables to monitor change (Barker, Pistrang, & Elliott, 2002). SCED's enable the establishment of not only whether change occurs, but also whether the change is significant, whether it is stable and what caused the change (Davies et al., 2007).

2.2 Epistemology

2.2.1 Functional Contextualism

The study was designed from the position of functional contextualism (FC). FC is the philosophy of science underlying modern behavioural psychology (Fox, 2008). FC incorporates principles of behaviour analysis (Ruiz, 2012) and assumes that all behaviour is influenced by context and is functional (Hayes, et al., 2012). It refers to the "ongoing act in context" (Hayes, 2004, p. 646), that is, the whole event and acknowledgment of the role of context in understanding an event with emphasis on a pragmatic truth criterion (Hayes, 2004).

Psychological events are considered ongoing interactions between a person

and their historical and situational contexts (Hayes, 2004). Thoughts are considered as behaviours which occur within a particular context in order to serve a function within that context.

The target in FC is the functional relationship between psychological events (thoughts, feelings, etc.) and events within an individual's environment (Fox, 2008). Researchers are interested in identifying the things within the environment that influence the occurrence and prevalence of private psychological events. Therefore, examination of the context in which behaviours occur is the target for functional contextualist investigators with the aim to produce general rules for interpretation of difficulties, prediction of what this difficulty means and influencing change for the individual (Hayes, et al. 2012).

The FC goals of prediction and influence means research focuses on examination of how particular contextual variables influence events (Fox, 2008). Descriptive or correlational studies are inappropriate as they do not allow isolation of which contextual feature may have influenced change (Fox, 2008). Single case experimental designs (SCED) allow the systematic manipulation of variables and measurement of the impact of this on the topic of interest (Fox, 2008). SCED's also provide time series data which enables the examination of the features which influence change and have therefore been used often in behavioural and contextual science research (Smith, 2012).

2.3 Inclusion criteria

There is no set cut off for clinical perfectionism within the extant literature. The multidimensional perfectionism scale (FMPS; Frost, et al., 1990) states that the higher the score on the measure, the greater level of perfectionism. To ensure that those included in the study had a level of perfectionism that might be considered high, mean FMPS scores in non-clinical populations were examined in the previous perfectionism research (Coles, Frost, Heimberg & Rheume, 2003; Frost, et al., 1990; Juster, et al., 1996; Parker & Adkins, 1995; Pleva & Wade, 2006; Sassaroli, et al., 2008; Stallman & Hurst, 2011). A score of 75 or higher on the FMPS measure was considered representative of a non-clinical

population from the studies reviewed and therefore identified as part of the inclusion criteria for the study.

The study was interested in the effect of ACT on perfectionism in adults therefore participants under 18 years of age were excluded from the sample. Participants were also required to not be accessing any form of psychotherapy for the duration of the study. Whilst the study was not investigating the impact of ACT on clinical difficulties or psychopathology, if participants were in receipt of psychotherapy for other difficulties during the study, it would be impossible to ascertain whether any change could be attributed to the self help ACT intervention in the study or whether change would be the result of psychotherapy. The exclusion of participants in receipt of psychotherapy enabled strengthening of inferences made regarding the effectiveness of the intervention.

Participants were required to be able to speak, read and understand English as the ACT workbook was written in English and translated versions were not available. Additionally, the lead researcher contacting participants every week was English.

2.4 Ethical considerations

The study was designed with reference to the British Psychological Society's code of human research ethics (British Psychological Society, 2010) and ethical approval was granted by the School of Psychology Research Ethics Committee (SOPREC) at the University of Lincoln.

Participants were provided with a study information sheet (see Appendix B) outlining the aims of the research and the procedures involved in participation to ensure that the participants were fully informed of what would be expected of them as participants and the aims and methods of the research as well as the intentions for the results.

Participants were made aware of their right to withdraw from the research and the limitations of this. They were informed that they could retract their data up to two weeks following completion of each of the tasks to allow for data

analysis. They were also made aware that it would not be possible to withdraw their data once the study had been written and submitted to the university.

Confidentiality of participants was respected and participants remained anonymous to everyone except for the lead researcher and the independent change interviewer. The individual completing the change interviews was provided with participant's names and contact details but was not privy to any other data provided by participants. It was not possible to remain anonymous to the lead researcher due to the nature of the study involving meeting and completing tasks face to face. Participants were asked to use a unique code when completing daily and weekly measures to allow for removal of their data if they chose to withdraw consent to participate.

Participants were informed of the experimental nature of the study and that the intervention (ACT) may not benefit them in the way they or the research hoped.

Participants were provided contact details for the principal investigator to enable them to ask questions, access support, give feedback or withdraw their consent. The participant's information sheet (Appendix B) and debrief sheet (See Appendix G) provided signposting to appropriate support services for participants who may have experienced distress during the study period.

2.5 Measures

*2.5.1 Comprehensive Assessment of Acceptance and Commitment Therapy Processes (**CompACT**; Francis, Dawson, & Golijani-Moghaddam, 2016)*

The compACT is a recently developed general measure of ACT processes. It is a 23 item questionnaire which clusters the six ACT processes into three dyadic processes; openness to experience, valued action and behavioural awareness. The compACT was developed to increase face validity of ACT measures and has been demonstrated to correlate with the DASS-21. This measure provides a total score which indicates psychological flexibility as well as scores for the three dyadic processes. The use of this measure will support the investigation into whether an increase in psychological flexibility will lead to improvements in

perfectionism. It also allows for comparison of changes to the domains of perfectionism with changes in psychological flexibility.

2.5.2 Acceptance and Action Questionnaire II (AAQ-II; Bond, Hayes, Baer, Carpenter, Guenole, Orcutt, Waltz, & Zettle, 2011)

The AAQ-II is a 7 item scale placing emphasis on acceptance and psychological inflexibility (Bond et al., 2011) with questions such as “*Worries get in the way of my success*”. The higher the score, the greater the psychological inflexibility. It has been shown to have test-retest reliability at 3 months (0.81) and 12 months (0.79) (Bond et al., 2011). The AAQ-II is currently widely used in ACT research therefore this measure was chosen to support the results from the compACT due to the compACT’s infancy in use for psychological research.

2.5.3 Multidimension Perfectionism Scale (FMPS; Frost, et al., 1990)

Frost, Marten, Lahart & Rosenblate (1990) developed the Frost Multidimensional perfectionism scale (FMPS) as a means of assessing multidimensional perfectionism. The FMPS is a self report questionnaire developed from previous measures of perfectionism (e.g., Burns, 1980) and dimensions discussed within the perfectionism literature. The measure is comprised of 35 items across six subscales (see Table 8) relating to the overarching features that Frost et al. (1990) surmised from the existing measures and literature. This includes the three domains considered to be maladaptive which are under investigation within this study

Higher scores on this measure indicate higher levels of perfectionism. Factor analysis revealed associations between all the subscales with the exception of Organisation, therefore this scale score isn’t included in the overall perfectionism score (Frost, et al. 1990).

The subscales related to parental expectation and parental concern are not state measures and are based on retrospective self reported perceptions. They do not indicate whether a person is currently a perfectionist or engaging in

perfectionistic thoughts and behaviours. These subscales are unlikely to change following an intervention.

*2.5.4 Depression, Anxiety and Stress Scale 21 (**DASS-21**; Lovibond and Lovibond, 1995)*

The DASS-21 is a short form of the 42-item depression, anxiety and stress (DASS) measure (Lovibond & Lovibond, 1995). Lovibond and Lovibond (1995), on development of the DASS-21, concluded that scores on this measure could be doubled and would be equivalent to scores on the full DASS measure. This was tested and supported by Henry and Crawford (2005) who concluded that the DASS-21 demonstrates adequate reliability and validity despite the reduction in items on the measure. As participants in the present study were required to complete four self report measures every week, the DASS-21 was felt to be more appropriate to reduce participant fatigue in completing the weekly measures.

A measure of distress was included in the test battery due to the wealth of research indicating associations between perfectionism and distress. Additionally, previous ACT research has found reductions in distress as a secondary impact of increasing psychological flexibility (Cavanagh, et al., 2014).

2.5.5 Daily Measure

The daily measure was a composite measure created using sample questions from the compACT, AAQ-II, FMPS and DASS-21. Questions were chosen based on factor loadings and face validity (See appendix C).

All the measures used within the present study are self report. Self report measures have limitations due to their subjective nature and potential for socially desirable responding.

Table 8. *The subscales of each of the weekly measures*

Measure	Subscale	No. of items	Construct/Relation to Literature	Example Question
compACT	Openness to experience	10	Willingness to experience internal events (acceptance/cognitive defusion)	<i>"Thoughts are just thoughts – they don't control what I do"</i>
	Valued Action	8	Greater engagement in valued actions	<i>"My values are really reflected in my behaviour"</i>
	Behavioural Awareness	5	Mindful attention to current actions	<i>"I rush through meaningful activities without being really attentive to them"</i>
FMPS	Concern over mistakes (CM)	9	The tendency to equate mistakes with failure	<i>"I should be upset if I make a mistake"</i>
	Personal Standards (PS)	7	Setting high standards and the disproportionate importance placed on those standards	<i>"I set higher goals than most people"</i>
	Doubts about Actions (DA)	4	Concern that actions have not been completed satisfactorily	<i>"I usually have doubts about the simple everyday things I do"</i>
	Parental Criticism (PC)	4	The belief that one's parents are overly critical	<i>"My parents never tried to understand my mistakes"</i>
	Parental expectation (PE)	5	The belief that one's parents set high standards	<i>"My parents set very high standards for me"</i>
	Organisation (O)	6	A preference for order	<i>"I am a neat person"</i>
DASS-21	Depression	7	Symptoms of depression	<i>"I felt down-hearted and blue"</i>
	Anxiety	7	Symptoms of anxiety	<i>"I felt I was close to panic"</i>
	Stress	7	Symptoms of stress	<i>"I found it difficult to relax"</i>

2.6 Materials

The workbook used within this study was compared to another book 'The Happiness Trap' by Russ Harris (2011) and to an application download for mobile devices called 'The happiness Trap App' to consider the medium which would work best for the study. Self help books are suggested to contain common therapeutic factors which support the establishment of an alliance with

the reader though they are limited with regards to some elements of therapeutic relationships, such as rupture repair (Richardson, Richards & Barkham, 2010) which may explain the better outcomes produced by guided self help interventions in comparison to pure self help.

The 'Get out of your mind and into your life' book by Hayes and Smith (2005) was deemed most suitable for the study as it has been utilised in previous research using a SCED design (Roche, Dawson, Moghaddam, Abey, & Gresswell, 2017) and the book could be easily separated into the 6 core ACT processes under examination enabling the SCED to examine the impact of each process on the outcome variables enabling demonstration of mechanisms of change for perfectionism and psychological flexibility. The book was also deemed user friendly as the exercises within it are clearly defined for participants to complete. 'The Happiness Trap' book and application do not have chapters clearly laid out for particular processes and many of the exercises are incorporated into the prose within the book and may be missed by participants; though this book appears more accessible in terms of language. The chosen text uses some language that may be less accessible to some participants but this was considered to be manageable due to the opportunities for participants to check understanding during the weekly telephone support. The application was deemed impracticable as it would be difficult to monitor each participants learning of the individual processes.

2.7 Procedure

2.7.1 Initial phase

The study was advertised using posters at the University of Lincoln and through social media (see appendix A). Interested participants were provided with a link to the online screening tool where they were provided with the participant information sheet (See appendix B) and asked to tick a box to consent to participating in the study. By ticking the box, participants were able to complete the online screening tool which was the complete FMPS measure and to leave their contact details for the researcher to contact them regarding the rest of the study. Participants scoring the highest on the perfectionism measure were then

contacted sequentially by the researcher until the sample size of five was achieved. Participants were then invited to meet with the researcher to discuss the study in more detail and to complete the pre-intervention test battery.

2.7.2 Baseline phase

Following completion of the pre-intervention test battery, participants were asked to complete the daily measure for a minimum of five days to establish a stable baseline prior to intervention. Five observations are often used within SCED research to determine stability (Morgan & Morgan, 2008). As the daily measure was comprised of questions from four different measures, the scores on questions relating to ACT processes were examined for a stable baseline as it was hypothesised that changes in psychological flexibility would result in changes in the other variables (perfectionism and distress). The data relating to the ACT process questions was plotted and visually analysed to find evidence of a stable trend in the data for a minimum of three days. The data was considered stable if there were a minimum of three sequential observations of no change (or deterioration).

Access to the daily measure was via a unique hyperlink which directed participants to the online daily measure. All self report measures used in the study were accessed online and created using the Qualtrics software (www.qualtrics.com)

2.7.3 Intervention phase

Once a stable baseline was attained, each participant was provided with chapters from the self help book “Get out of your mind and into your life” by Hayes and Smith (2005) and instructed to read the chapters over the course of a week. Initially participants were provided with the introduction chapters which socialise them to the ACT model alongside the chapters related to the ACT process of (1) Acceptance. Each week participants were provided with further chapters pertaining to the ACT processes of (2) Cognitive defusion, (3) self as context, (4) present moment awareness, (5) Values and (6) committed action.

The chapters were sent out in this way to ensure that a specific ACT process was being measured each week. Participants were contacted via telephone each week to discuss the chapters and offer support to participants. Participants were asked to complete the weekly measure at the end of each week following completion of the chapters and were also asked to complete the daily measure each day. Participants received a daily text message to support them in remembering to complete the daily measure. Similarly, to the daily measure, the weekly measure could be accessed online via a provided hyperlink.

As each participant began the intervention phase at a different time, the separation of the book into processes relating to the specific ACT processes enabled stronger inferences to be made about any changes or patterns within the data across participants.

2.7.4 Post intervention

Following completion of the final chapters ((6) Committed Action), participants repeated the test battery, including self report questionnaires and behavioural tasks. Participants also completed a change interview (See appendix E) post-intervention. This was developed and structured within the framework suggested by Elliot, Slatick and Urman (2001) and was administered by an independent researcher familiar with the aims of the study but blind to participants scores. The change interview allows collection of qualitative data from participants regarding how they found the intervention, any changes they experienced during the study period and whether they would attribute these to the intervention (Elliott, 2010). It also allowed consideration of any outside factors which have impacted on the results of the study. The qualitative data obtained from the change interview was considered alongside the quantitative data from the study measures allowing for support or refutation of any inferences made from the data.

2.7.5 Follow up

Six weeks after completion of the post-intervention tasks, participants were asked to complete the test battery for the final time. A follow up was considered important as it would allow for examination of treatment effects over time. As the measures used were predominantly self report and required participants to complete them daily, this can produce a placebo or Hawthorne effect (Kangas, Bovbjerg, & Montgomery, 2008). A Hawthorne effect is where participant's knowledge that they are being studied causes a change in the behaviour under observation that is not necessarily due to the intervention under examination (Adair, 1984). If the study results were the result of such an effect, this is likely to be temporary therefore repeated measurement at a later time can allow exploration of this.

2.8 Determining reliable and clinically significant change

To assess whether an individual has experienced a meaningful change as a result of the intervention Jacobson and Truax (1991) suggest it is important to assess whether participants have made a reliable change (RC) and whether this change was clinically significant (CSC). Reliable change, also termed the reliable change index (RCI) determines whether the size of the change for a participant is statistically reliable and clinically significant change (CSC) is the extent to which the intervention has moved a person from the range of the clinical population to that of the non-clinical population (Jacobson & Truax, 1991).

The reliable change index determines whether the change between an individual's pre-intervention and post-intervention scores is statistically significant (Jacobson & Truax, 1991).

The RCI is calculated by dividing the change in an individual's score from pre-intervention (X^1) to post-intervention (X^2) by the standard error of the difference of the measure used (s_{diff}).

$$RCI = \frac{X^1 - X^2}{s_{diff}}$$

Figure 16. RCI calculation formula (Jacobson & Truax, 1991)

The standard error of difference of a test is calculated by multiplying the standard deviation of test takers' scores by the square root of (one minus the coefficient of reliability [r]) which gives the standard error of measurement score. This is then used to calculate the standard error of difference using the following formula.

$$s_{diff} = \sqrt{2(SEM)^2}$$

Figure 17. Standard error of difference calculation formula

This calculation provides the number that an individual score must change by in order to reliably state that the change is not due to chance (at 95% confidence) (Jacobson and Truax, 1991). The change in score can increase or decrease dependent on the direction of clinical gain demarcated by the test. Therefore, a reliable change at 95% confidence is indicated if an individual's change in score is equal to or greater than the RCI value (Jacobson & Truax, 1991).

If a reliable change in score is observed, then post-treatment scores can be examined for clinical significance. If a change in scores is not deemed reliable then a clinically significant change cannot be observed.

Clinically significant change (CSC) can be assessed in three different ways (Jacobson and Truax, 1991).

- Criterion a – if an individual's post-intervention score is more than two standard deviations from the mean score of a clinical group then CSC can be achieved

- Criterion b – If an individual's post-intervention score is within two standard deviations of the mean score of a non-clinical group then CSC can be achieved
- Criterion c – If an individual's post-intervention score is closer to the mean of a non-clinical group than the mean of the clinical group.

RCI and CSC scores are useful in determining whether changes made from pre- to post-intervention are significant. RCI scores are particularly useful in SCED research as they can be used with small sample sizes and they allow the changes in the individual to be tracked across time (Zahra & Hedge, 2010). Participants in this study were recruited as they had expressed an associated distress with their perfectionism and research suggests that when people seek treatment at times of distress, there is often a systematic regression to the mean regardless of whether they receive treatment or not (Evans, Margison & Barkham, 1998). To separate this natural regression from treatment effects, it is advised that multiple observation prior to treatment is used (Evans, et al, 1998). This was employed in this study within the baseline phase of the SCED, however this only applied to the daily measure and not full measures upon which the RCI and CSC scores were calculated.

The measures used to determine RCI and CSC within this study were self report measures of symptoms. The scores indicate symptom change. There is argument that symptom change should not be the standard that meaningful change is assessed against in individuals and that other criteria should be considered, such as impact on relationships or quality of life (Kazdin, 2001).

If symptom improvement is small and does not meet the RCI cut-off score, the RCI and CSC method assumes that this change is the result of measurement error. Hageman and Arrindell (1993) argue that in some cases a small change can be a meaningful shift for that individual. This is supported by Kazdin (2001) who argues that treatment for those who do not move out of the clinical range should not be considered as unsuccessful.

Despite this critique, the RCI and CSC method allows the study of individual change (Wise, 2004) which is an important aspect of research into

psychological interventions. The current study also included behavioural outcome measures and qualitative data regarding the impact of the intervention on the individual as part of the change interview. This inclusion of functional measures means that the criticism related to the importance placed on symptom reduction could be ameliorated. The use of the combination of measures also fits with the goals of ACT, where symptom reduction is not the focus of the intervention (Hayes, et al., 2006).

Within SCED research smaller samples lead to difficulties in using the standard deviation of the test takers scores in order to calculate the RCI. An alternative method is to use data from existing research using larger sample sizes using the measure (Jacobson & Truax, 1991). The reference data used to calculate the RCI should be representative to the population of interest (Jacobson & Truax, 1991). If using non-clinical population data, the reference study sample should be as similar as possible to the study, in age distribution and country where the data was obtained (Evans, et al., 1998). If using clinical population reference data, sample location and severity should be reported and when using reference data, reliability of the measure should always be reported (Evans, et al., 1998). The present study used reference data from existing literature to support calculation of the RCI and CSC scores.

The reference sample's utilised were all representative of a non-clinical sample. As perfectionism is not considered a clinical difficulty and the sample for the present study were recruited from the general population, this is appropriate.

Table 9

Reference data used for RCI and CSC analyses

Measure	Reference Study	Sample type	Reliability of measure (Cronbach's alpha)	CSC criterion
compACT	Francis, Dawson, & Golijani-Moghaddam, (2016)	UK adult population	.91	b
FMPS	Frost, Steketee, Cohn & Griess (1994) – study 1	Graduate students	.90	b
AAQ-II	Bond, et al. (2011)	Undergraduate students (USA)	.84	b
DASS-21	Henry & Crawford (2005)	General UK adult population	.93	b

Table 10

RCI Values and CSC cut-off Scores applied to the measures

Measure	Critical RCI value*	CSC cut off
compACT	17.41	45.79
FMPS	14.9	105.92
AAQ-II	4.85	25.91
DASS-21	14.73	56.73

*Individual change-scores \geq this value were statistically significant at $p \leq .05$

3. Extended Results

3.1 Psychological Flexibility

Further analyses were conducted on the measures of psychological flexibility to examine the changes across the intervention phase of the study (see figures 9 & 10 and 18-20 for visual representation of these results).

Openness to experience (OE):

All participants showed an increase in openness to experience, indicating improvement, as measured by the compACT across the study (see figures 9-10 in Journal paper and 18-20 in extended paper). Participant one (P1) reported decreased scores at the present moment awareness phase but increased following this. Participant 2 (P2) showed a strong increase in OE following the present moment awareness phase. All participants, with the exception of P2, demonstrated an increase in OE during the acceptance and cognitive defusion phase of the study. The openness to experience subscale was developed to incorporate the acceptance and cognitive defusion processes from the ACT hexaflex therefore changes in OE during these phases suggests the compACT is measuring the processes that it claims to do.

Behavioural Awareness (BA) (see figures 9-10 in Journal paper and 18-20 in extended paper):

Participant 4 demonstrated an increase in BA across the self as context and present moment awareness phases. Participants 3 and 5 showed stability across these phases with participant 5 showing an increase at the values stage and participant 3 showing an increase at the committed action stage.

Participant one showed a decline following the present moment awareness phase but this increased again from values to the end of the study. Participant 2 showed a decline following the self as context phase but this increased again following the present moment awareness phase.

Valued Action (VA) (see figures 9-10 in Journal paper and 18-20 in extended paper):

Participant 1, 2 and 4 showed increases in valued action scores during the values and committed action phases of the study. Participant 3 showed a decline at the values stage but this then increased again at the committed action phase. Participant 1 appeared to remain stable during these phases.

Participant 2

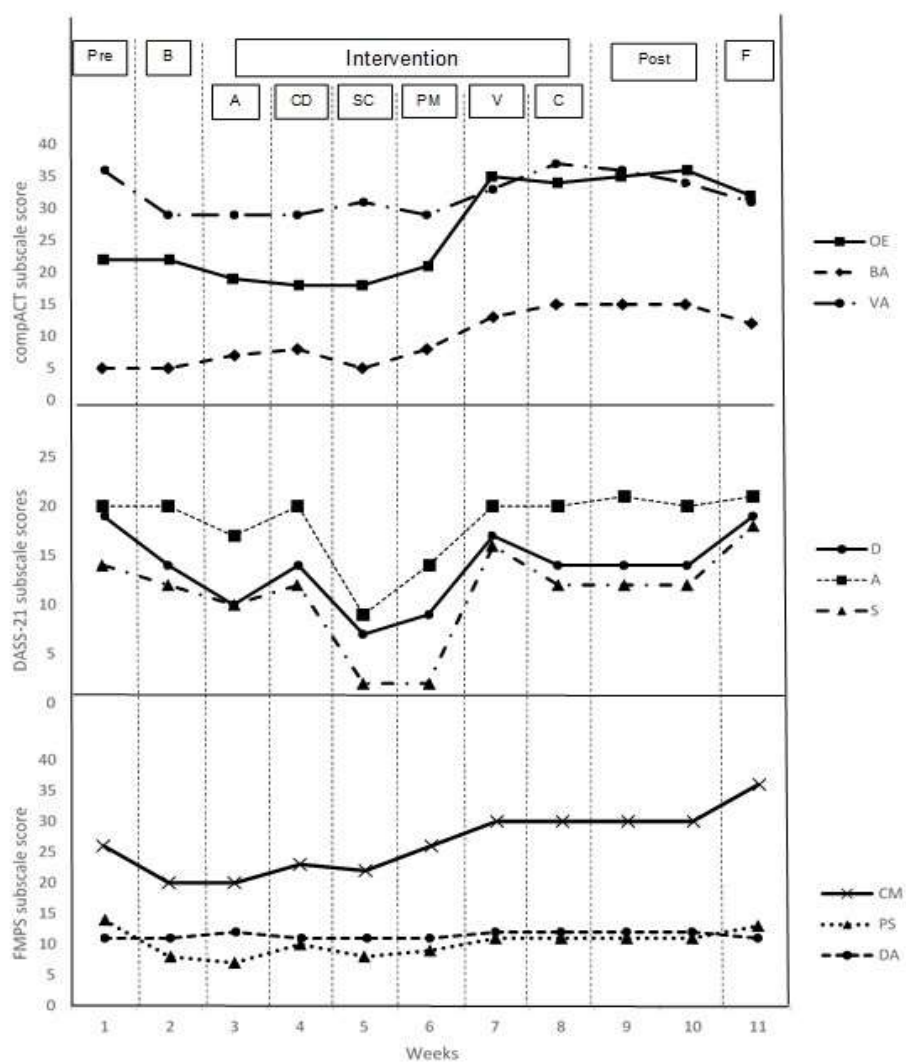


Figure 18. Visual representation of changes in subscale scores on weekly measures across the study period for participant 2. Increasing scores = improvement.

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), C (committed action phase), P (Post-intervention), F (Follow up). Vertical Axis: OE (Openness to experience), BA (Behavioural awareness), VA (Valued action), D (Depression), A (Anxiety), S (Stress), CM (concern over mistakes), PS (Personal standards), DA (Doubts about actions)

Participant 4

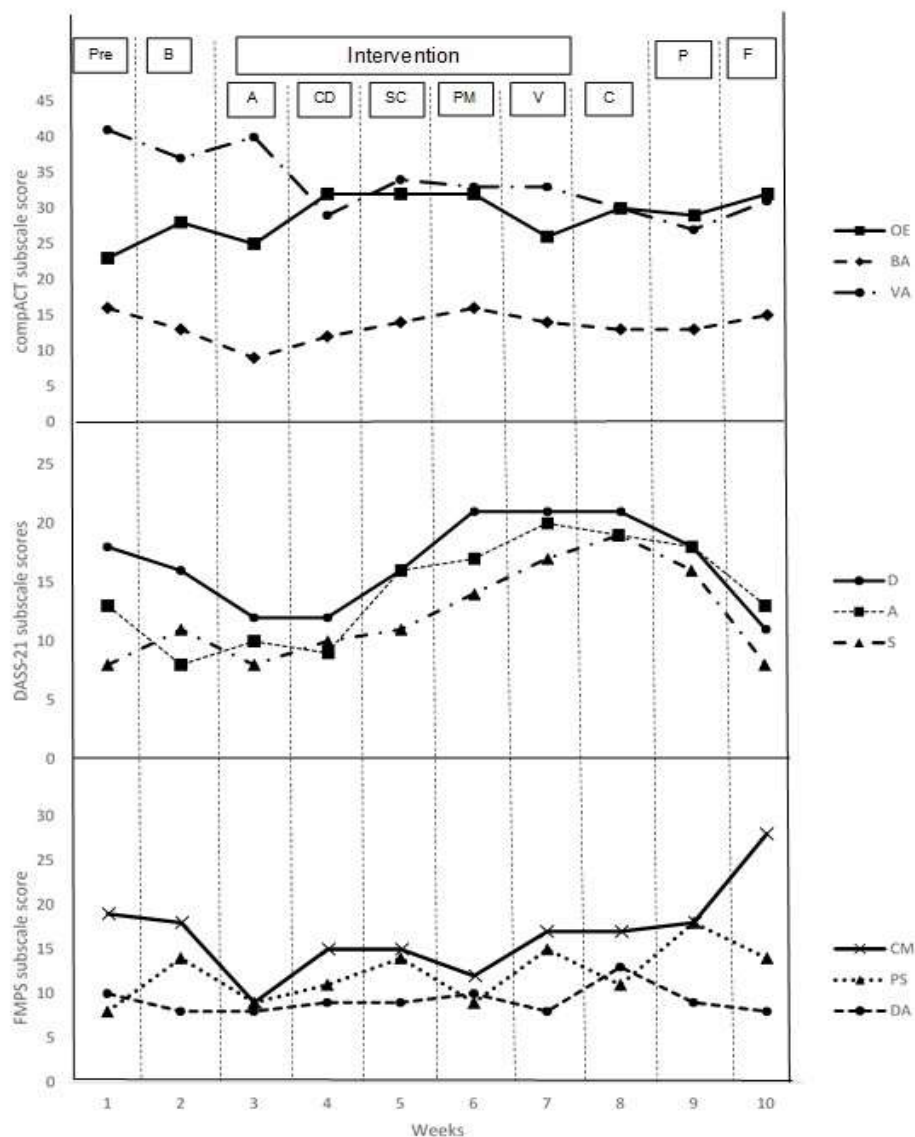


Figure 19. Visual representation of changes in subscale scores on weekly measures across the study period for participant 4. Increasing scores = improvement.

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), C (committed action phase), P (Post-intervention), F (Follow up). Vertical Axis: OE (Openness to experience), BA (Behavioural awareness), VA (Valued action), D (Depression), A (Anxiety), S (Stress), CM (concern over mistakes), PS (Personal standards), DA (Doubts about actions)

Participant 5

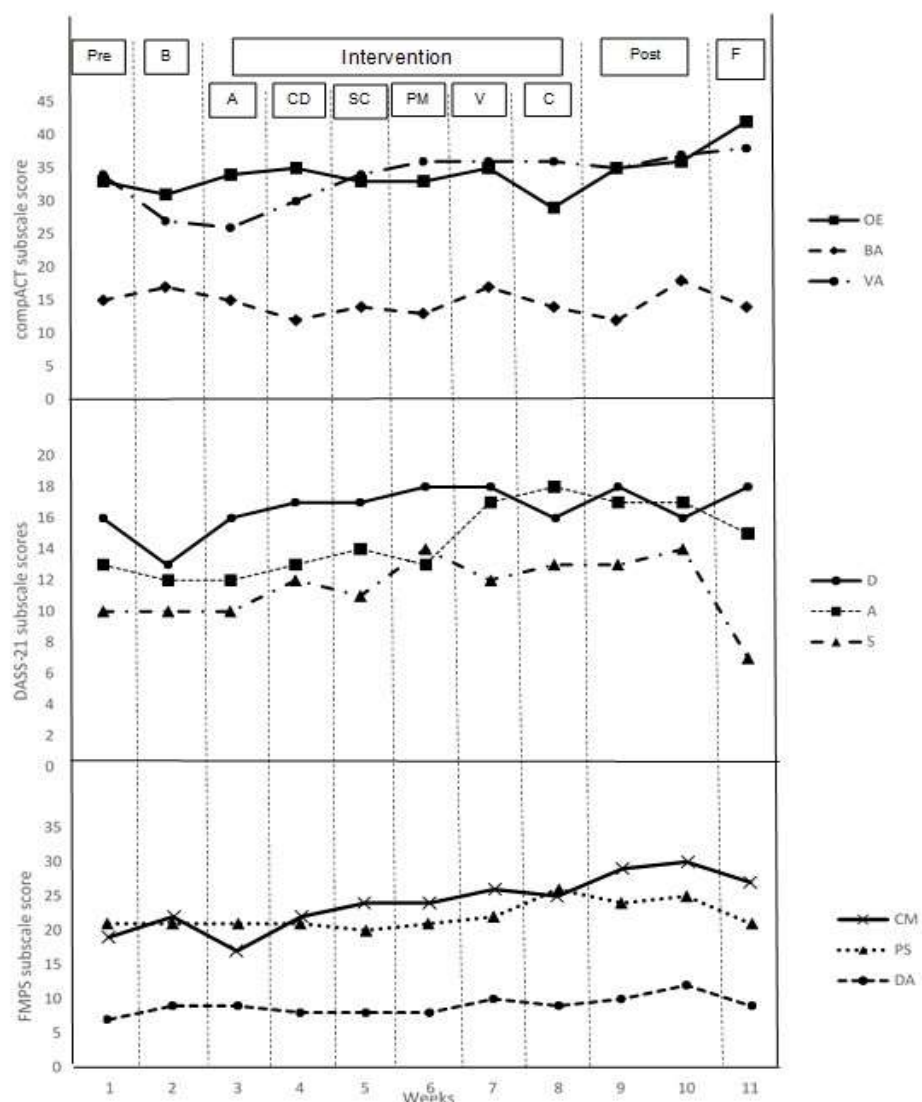


Figure 20. Visual representation of changes in subscale scores on weekly measures across the study period for participant 5. Increasing scores = improvement.

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), C (committed action phase), P (Post-intervention), F (Follow up).
Vertical Axis: OE (Openness to experience), BA (Behavioural awareness), VA (Valued action), D (Depression), A (Anxiety), S (Stress), CM (concern over mistakes), PS (Personal standards), DA (Doubts about actions)

3.2 Multidimensional Perfectionism

Further analysis was conducted to examine the impact of the intervention on the domains of perfectionism considered to be maladaptive within the literature.

Concern over mistakes (CM):

All participants demonstrated reliable change in concern over mistakes at follow up and three out of five demonstrated a reliable change at post-intervention (see figure 21).

Four participants reported an increase in scores on this subscale from pre-intervention to baseline. Participants 4 and 5 demonstrated an increase in CM from baseline to the acceptance phase. Three participants showed a decrease in CM, indicating improvement, between the self as context phase and the present moment awareness phase. Three participants also reported a decrease in CM during the values phase and this continued to decrease into the committed action phase. (see figure 22)

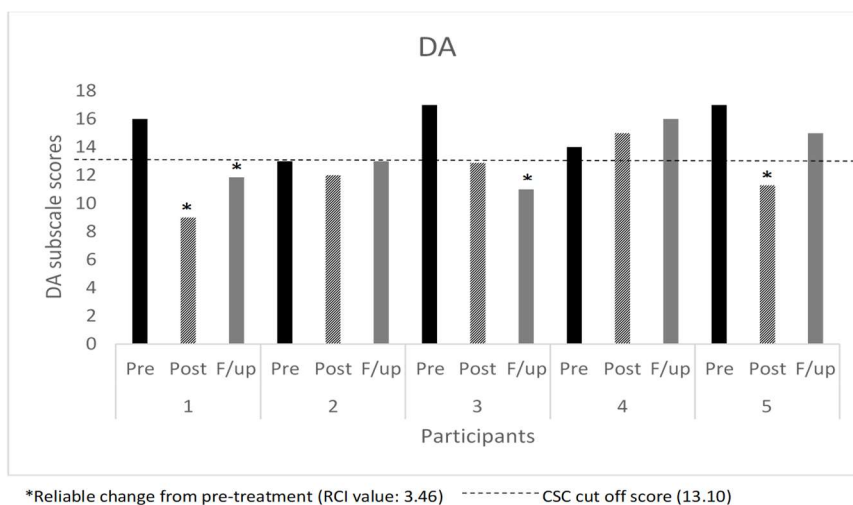
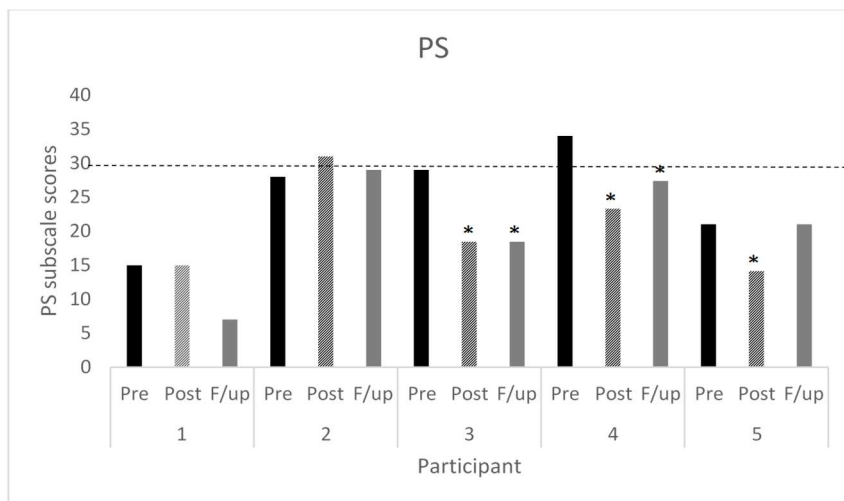
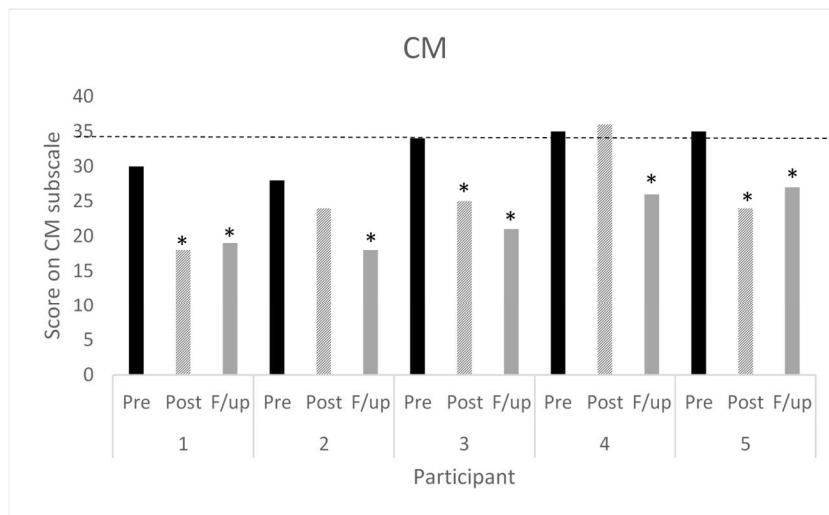


Figure 21. Graphs demonstrating change in scores (including RCI and CSC) across the phases of the study on the subscales of the FMPS. Decreasing scores = improvement.

*CM – Concern over mistakes scale; DA – Doubts about actions scale; PS – Personal standards scale

Concern over mistakes

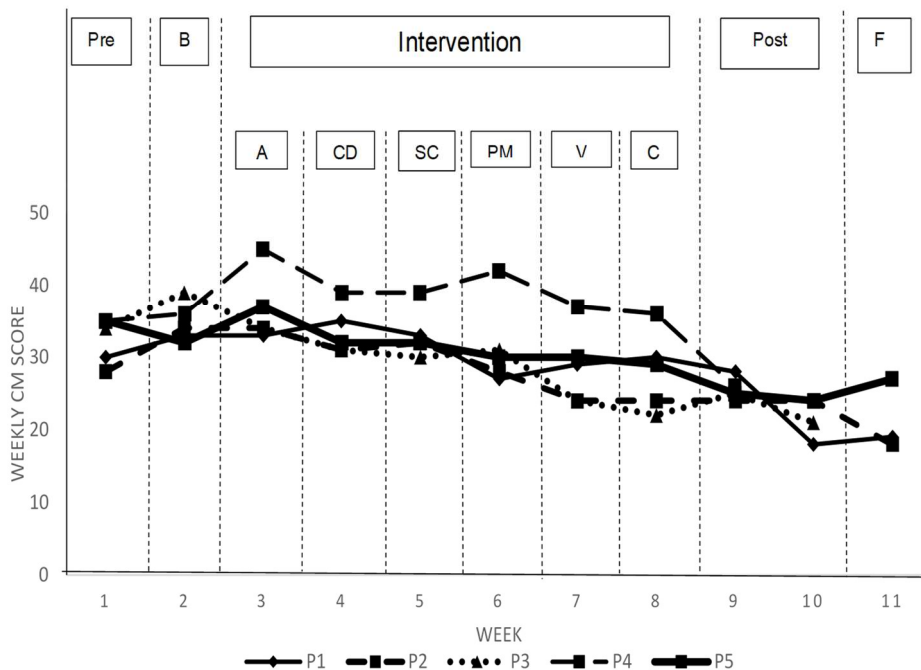


Figure 22. A graph showing the change in scores on the concern over mistakes subscale of the FMPS across the intervention stage for all participants.

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase), P (Post-intervention), F (Follow up)

Change in concern over mistakes appears to occur within the middle of the intervention phase (either self as context, present moment awareness or values) across all participants.

Personal standards:

Four out of five participants demonstrated a reliable decrease in scores on the personal standards subscale (see figure 21). One of these was also clinically significant (P4). Participant 4 showed fluctuating scores on this subscale across each phase of the study (figures 19 and 23). Other participants appeared more stable with slight declining trends.

There is no clear point of change in personal standards across the intervention stage. Scores remained relatively stable throughout the intervention (figure 23).

Personal Standards

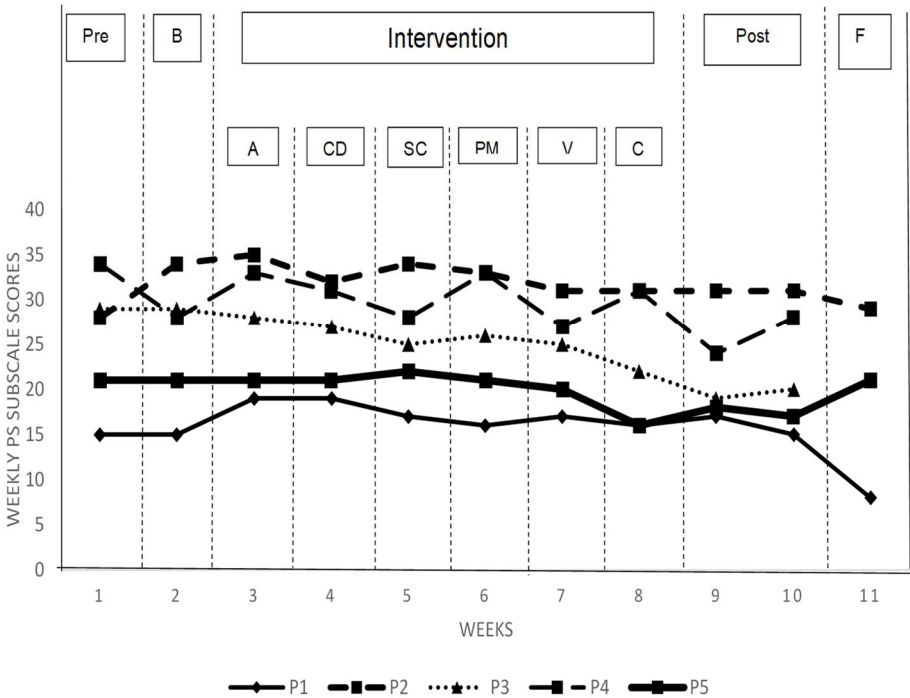


Figure 23. A graph showing the change in scores on the personal standards subscale of the FMPS across the intervention stage for all participants. Decreasing scores = improvement.

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase), P (Post-intervention), F (Follow up)

Doubts about Actions:

Figure 21 demonstrates that three out of five participants had reliable and clinically significant reductions in scores on doubts about actions. Scores increased at the follow up phase for all but one (P3) participant.

Figure 24 shows three participants had a reduction in DA scores at the acceptance phase of the intervention. Participant 1 and participant 3 show declining trends across the intervention phase.

Doubts about Actions

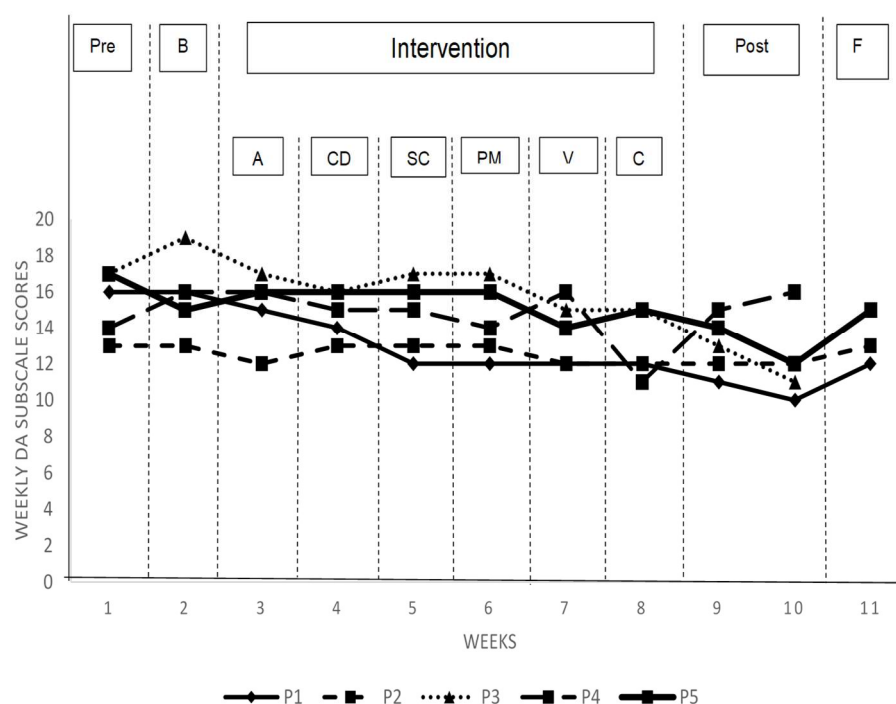


Figure 24. A graph showing the change in scores on the doubts about actions subscale of the FMPS across the intervention stage for all participants. Decreasing scores = improvement.

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase), P (Post-intervention), F (Follow up)

Subscales not associated with maladaptive perfectionism:

The literature on perfectionism clearly identifies organisation as an element of perfectionism but not necessarily one which impacts on psychological distress (Frost, et al., 1990). Across the intervention phase of the study, scores on the organisation subscale of the FMPS remained stable across participants, with the exception of participant 3, who showed a reliable reduction in organisation at the follow up. The Parental Expectations (PE) and Parental Criticism (PC) subscales of the FMPS are considered state measures and were hypothesised not to be effected by an intervention due to their retrospective nature.

Interestingly, two participants (P2, P4) demonstrated reliable decrease in scores on the PE scale and one participant did so on the PC scale. Participant 2 had a

large decrease in score on the PE subscale at follow up and participant 4 remained stable at follow up.

The time series data from the daily measure was also graphed and subject to visual analysis (see figures 25 & 26). Downward trends can be viewed across participants, with the exception of P5. Reduced perfectionism scores occur across the present moment awareness, values and committed action phases of the intervention across three participants (P2, P3, P4).

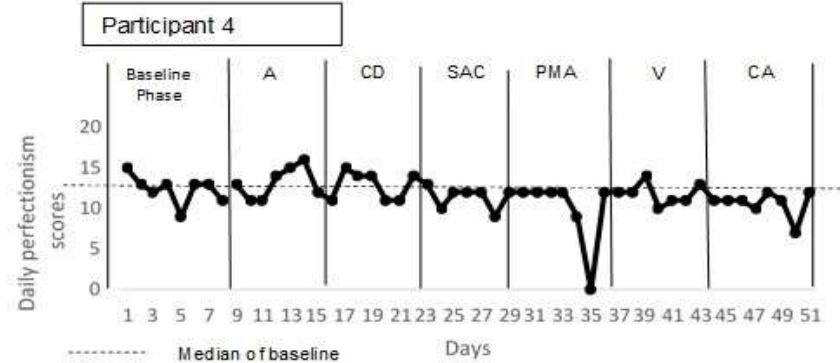
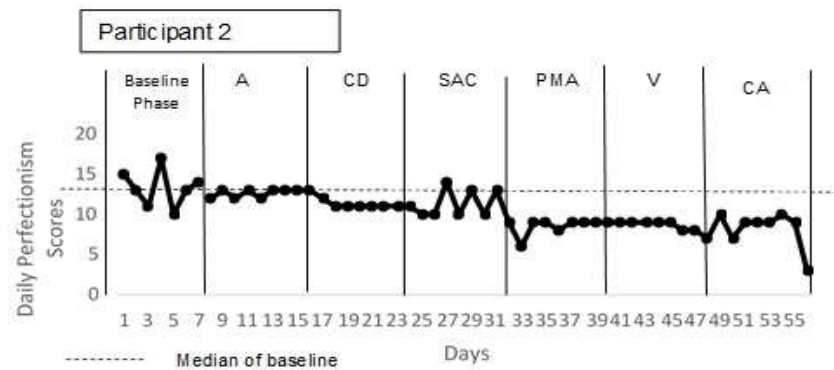
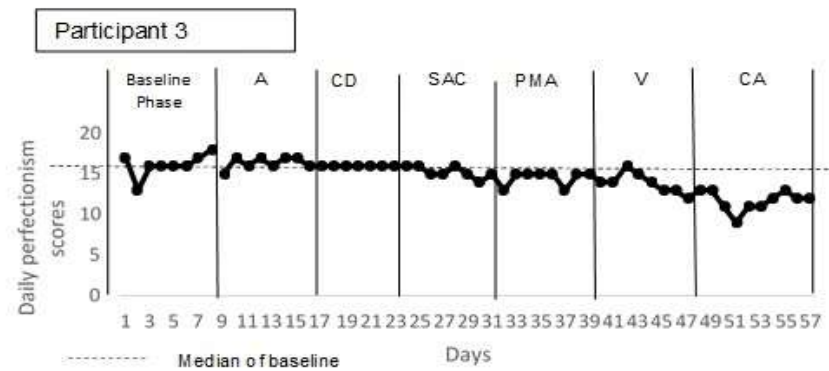
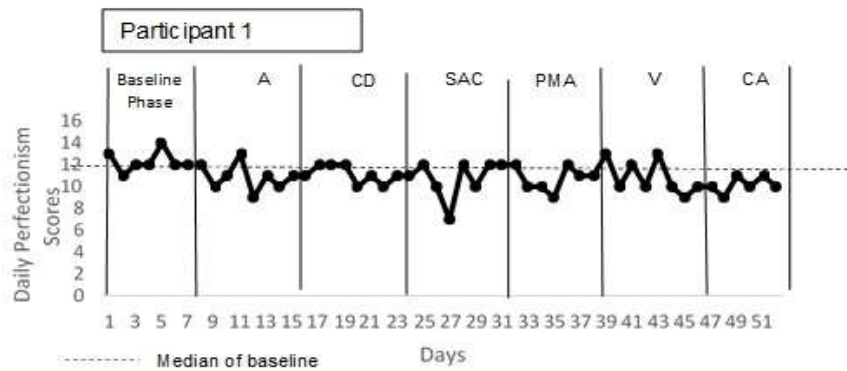


Figure 25. Time series data for perfectionism scores inspected using visual analysis and PEM method (Ma, 2006). Decreasing scores indicate improvement. (Participants 1-4)

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase)

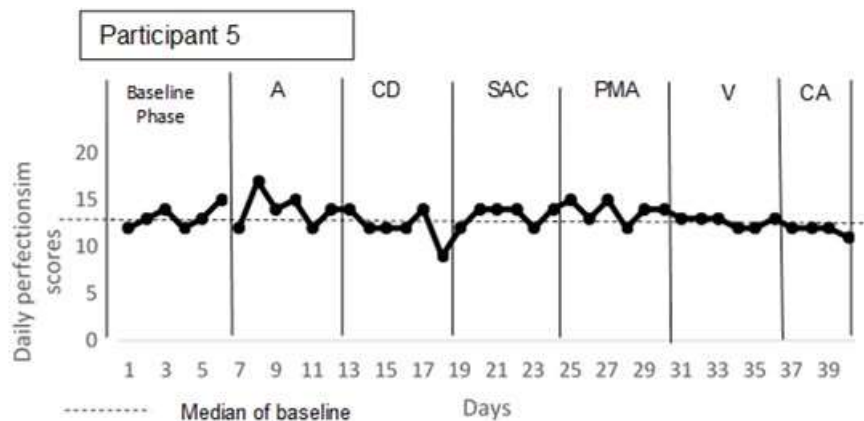


Figure 26. Time series data for perfectionism scores inspected using visual analysis and PEM method (Ma, 2006). Decreasing scores = improvement (Participant 5)

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase)

3.3 Distress

Depression:

Figure 28 shows changes in depression scores across participants from pre-intervention to follow up. Two participants (P1, P3) demonstrated reliable change in depression scores at post intervention and three at follow up. Depression scores increased for three participants at the follow up, with one participant (P4) demonstrating a reliable increase in depression at this time.

Changes in scores across the intervention phases of the study can be viewed in figure 27. Participant 2 showed an increase in depressive symptoms during the acceptance and cognitive defusion phases, this dropped during self as context but then increased again at present moment awareness. This increase coincides with qualitative information gained through the weekly telephone support where this participant had reported a personal difficulty within her family at this time. A large decrease in depression scores was seen in participant 2 during the values and committed action phases. Participant four shows a decrease in depression scores from the self as context phase which continues until post-treatment.

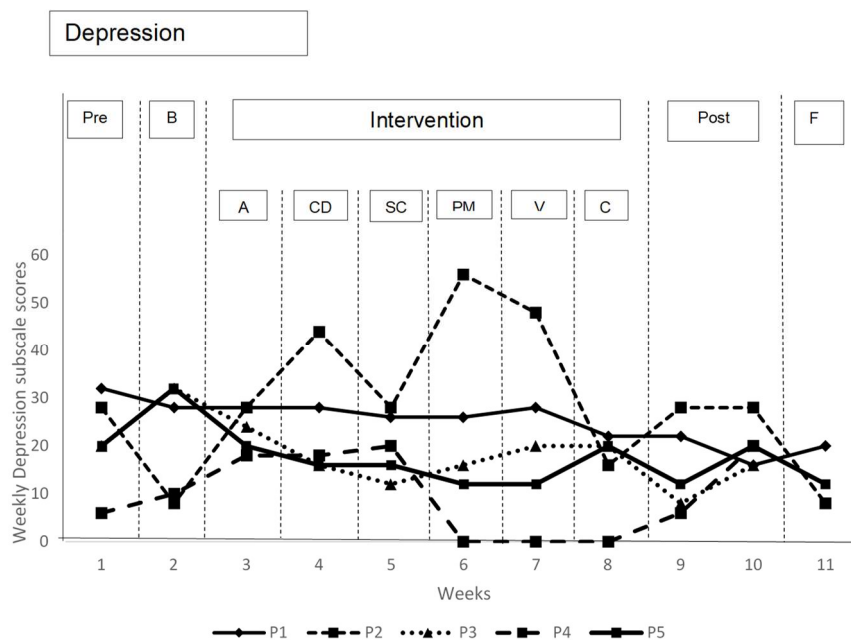


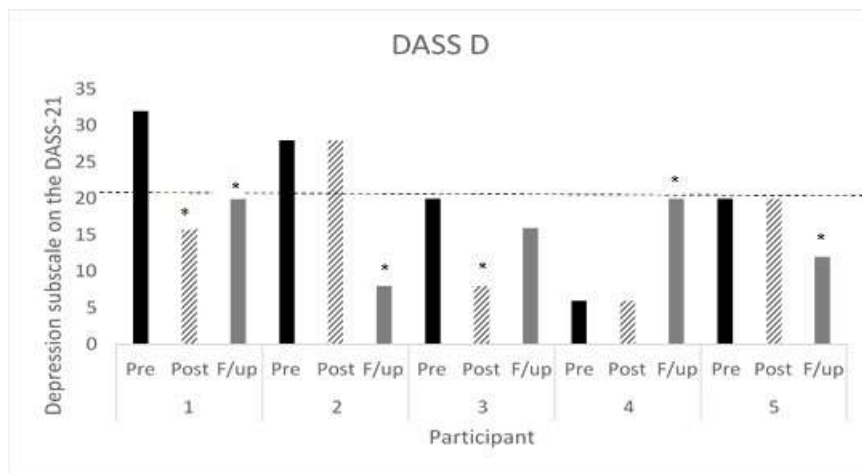
Figure 27. A graph showing the change in scores on the Depression subscale of the DASS-21 across the intervention stage for all participants. Decreasing scores = improvement

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase), P (Post-intervention), F (Follow up)

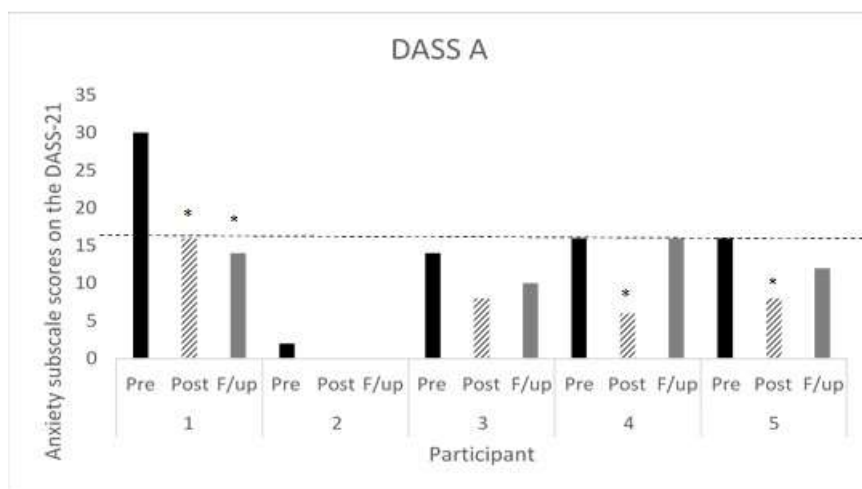
Anxiety:

Reliable change was observed in three participants on the anxiety subscale from pre- to post-intervention (see figure 28).

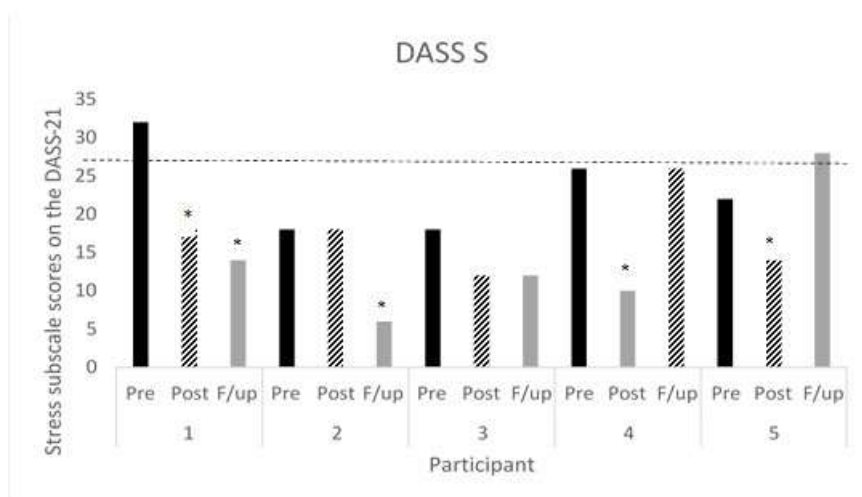
Decreased scores on the anxiety subscale were observed during the self as context phase of the intervention across three participants (figure 29). The large increase in score for participant 2 during the present moment awareness stage mirrors the participants score on the depression scale and is likely to also be the result of external factors (family difficulty) at this time.



*reliable change from pre-treatment (RCI value: 7.43) ----- CSC cut-off score (20.83)



*reliable change from pre-treatment (RCI value: 6.94) ----- CSC cut-off score (15.32)



*reliable change from pre-treatment (RCI value: 7.36) ----- CSC cut-off score (25.29)

Figure 28. Graphs demonstrating change in scores (including RCI and CSC) across the phases of the study on the subscales of the DASS-21. Decreasing scores = improvement

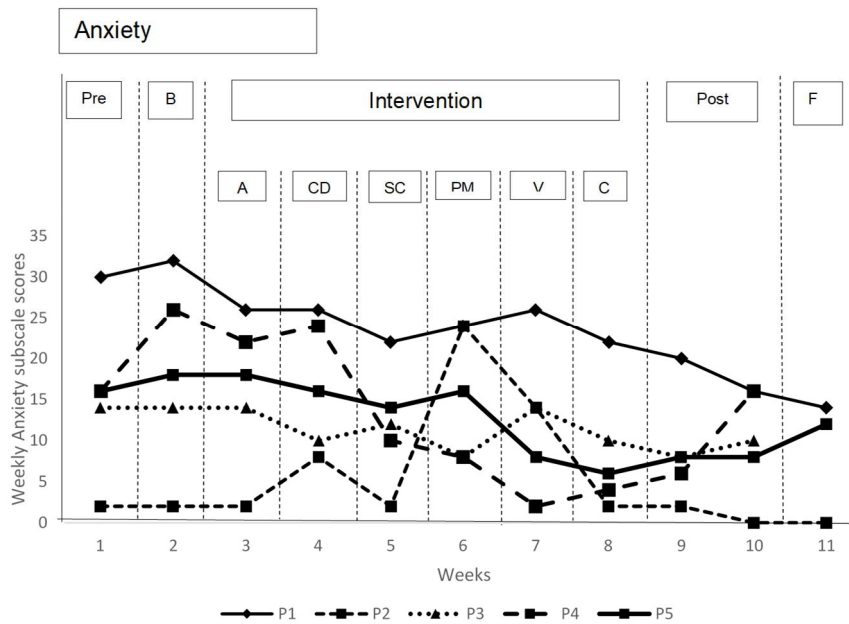


Figure 29. A graph showing the change in scores on the Anxiety subscale of the DASS-21 across the intervention stage for all participants. Decreasing scores = improvement

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase), P (Post-intervention), F (Follow up)

Stress:

Four participants demonstrated a reliable reduction in scores on the stress subscale of the DASS-21 (see figure 28).

Daily distress scores were graphed and subject to visual analysis (figures 31 & 32). Downward trends are observed across participants, with the exception of P5. A decline in distress scores is demonstrated in three participants during the present moment awareness phase. For P2, this continues through the values and committed action phases, however for P3 and P4, there is an increase during the values stage which then reduces again during committed action.

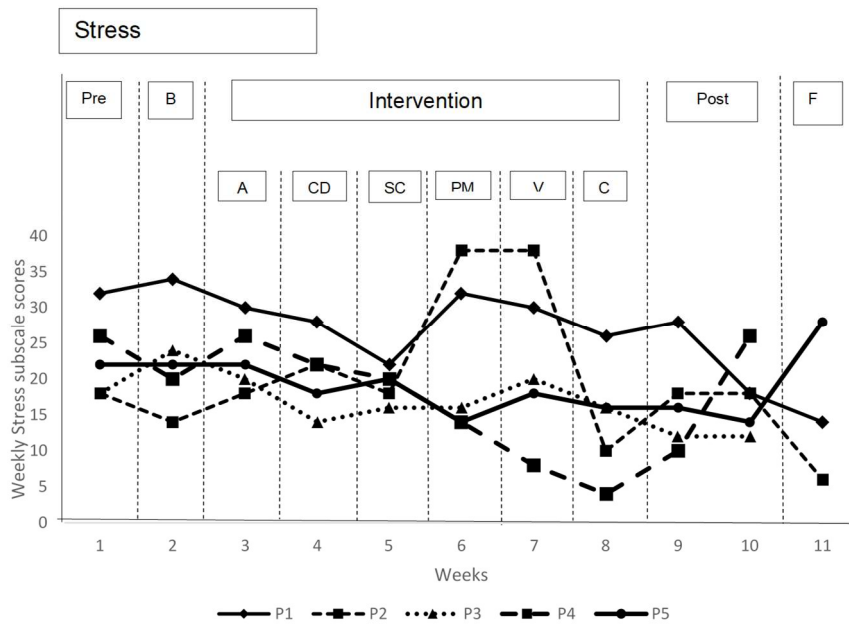


Figure 30. A graph showing the change in scores on the Stress subscale of the DASS-21 across the intervention stage for all participants. Decreasing scores = improvement

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase), P (Post-intervention), F (Follow up)

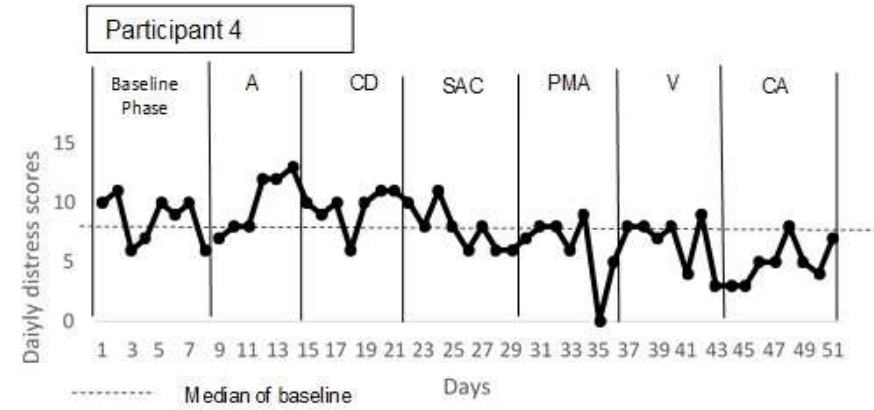
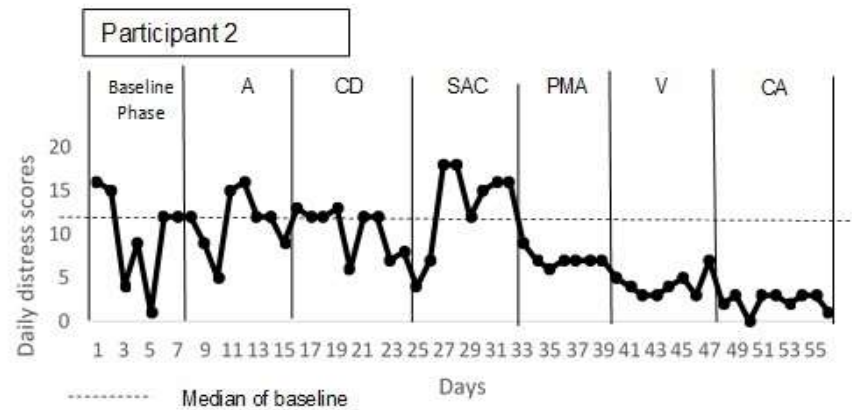
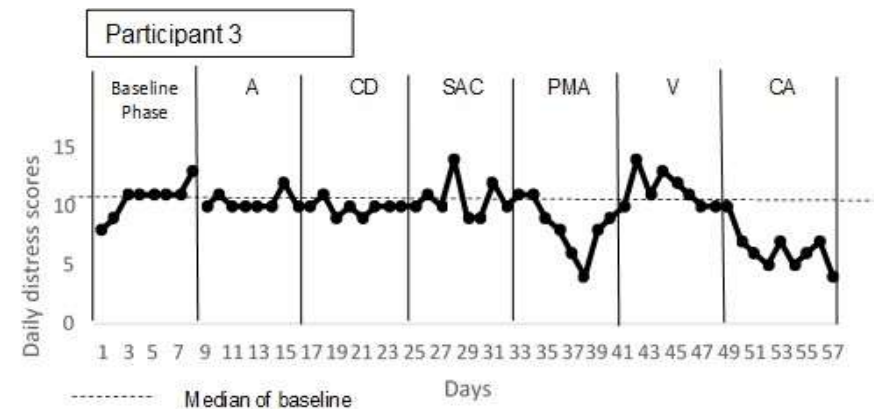
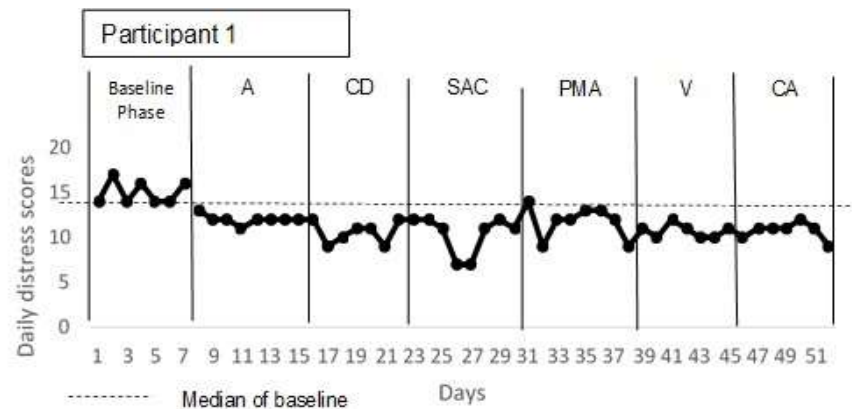


Figure 31. Time series data for distress scores inspected using visual analysis and PEM method (Ma, 2006). Decreasing scores = improvement (Participants 1-4)

**A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase)*

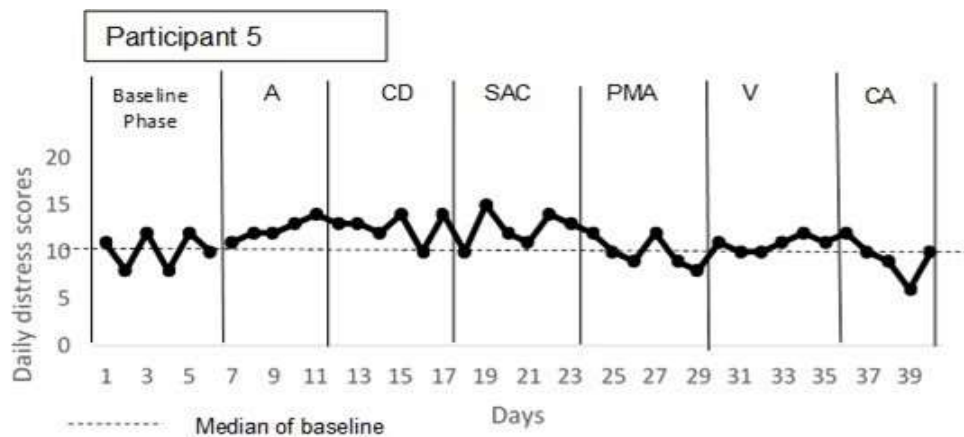


Figure 32. Time series data for perfectionism scores inspected using visual analysis and PEM method (Ma, 2006). Decreasing scores = improvement (Participant 5)

*A (Acceptance phase), CD (Cognitive defusion phase), SC (Self as Context phase), PM (Present moment awareness phase), V (Values phase), CA (committed action phase)

3.4 Verbal feedback and Change interview

Participant perspectives are often neglected in research yet they yield important information regarding which parts of an intervention were most helpful and considered as responsible for any changes (Paulson, Everall, & Stuart, 2001).

During the study, the lead researcher kept contact with all participants and there were occasions where comments made were felt to be pertinent to the study aims.

“It doesn’t matter if I get some wrong” – P1 completing the proof reading task post-intervention

“I don’t think this book is aimed at people like me – it seems to be all about anxiety and depression” (P2)

“I probably wouldn’t engage with the tasks so well if I didn’t know you would be ringing me each week” (P3)

“I’ve done self help stuff before but this is different” (P4)

Table 11

Participant Responses to change interview questions

P	Understand	Rec.	Infl. chpt	Perf. change	Beh. Changes	Life change	Pos/Neg	Surprised	Importance	Attribute	Expect.	Ext.	Support
P1	Yes	Yes	Mindfulness Committed Action	Less time on tasks Less critical of performance	Think things through more Know thoughts are normal	Not sure	Positive	4	3	3/4	Yes	Started anti-depressant medication	Brilliant – “easy to talk to” and “flexible”
P2	Somewhat	Yes	None – “can see how it might be helpful to others but not for me”	Less concern about mistakes	None	None	Positive	4	Important	Yes-Likely	Yes	Father in hospital	“Great – did everything she said she would do”
P3	Yes –	Yes	Cognitive defusion and mindfulness	“My view on what’s important has changed. I’ve tried new things which I wouldn’t have done before”	“Yes – letting things go, I’m not so controlling and I’m taking more risks (in instances where people might judge me).”	I’m still a really busy person but I feel like I’ve taken the pressure off. I’m also more willing to try new opportunities. I’m making choices that I wouldn’t normally make and that’s a good thing for me.”	Positive	4	5	5	Exceeded	N/A	Brilliant, supportive encouraging
P4	Yes	Yes	None	None	None	None	N/A	N/A	N/A	N/A	No expectations	None	Very good
P5	Somewhat	No	Mindfulness	None	None	None	N/A	N/A	N/A	N/A	No	Change in relationship during study	Good

P (Participant); Understand (Was the book easy to read and understand?); Rec. (Would you recommend the book?); Infl.Chpt (Influential chapters); Perf.Change (Changes in perfectionism); Beh. Change (Changes in behaviour); Life change (Changes in life); Pos/Neg (Were the changes positive or negative?); Surprised (How surprised were you by the changes? 1-5); Importance (How important were the changes? 1-5); Attribute (Would you attribute the change to participation? 1-5); Expect. (Did the study meet your expectations?); Ext. (External factors which may have influenced results); Support (How did you find the researcher support?)

3.5 Summary of results for each participant

This section provides a narrative synthesis of each individual participant's results (for tabulated/graphed results, please refer to journal paper and/or section 3 of the extended paper)

3.5.1 Participant 1 (P1)

Participant 1 reported an improvement in psychological flexibility across the intervention stage, this was evident from the acceptance phase of the intervention. Psychological flexibility, as measured by the compACT increased further at the six week follow up measurement – potentially supporting the notion that ACT may have an incubation effect. Significant changes were also reported within the perfectionism domains; a significant reduction in the FMPS total score (indicating improved perfectionism) was observed, with change occurring from the acceptance phase of the intervention. Concern over mistakes and doubts about actions were significantly improved in P1 from pre-intervention to post-intervention and these changes were observed to occur following the cognitive defusion phase of the intervention. Results from the behavioural tasks support these reported changes as P1 showed a large reduction in time taken on the proof reading task with a similar level of accuracy. Additionally, P1 was recorded as saying “it doesn't matter if I get it wrong” when discussing the proof reading task with the lead researcher. This suggests P1's concern over making mistakes may have reduced over the course of the intervention. Significant improvements in distress were also reported with movement from a clinical population level to a sub-clinical level on the depression subscale. The changes in distress should, however be taken with caution as during the change interview P1 disclosed commencement of anti-depressant medication during the study period.

3.5.2 Participant 2 (P2)

Participant 2 (P2) had conflicting results on the two measures of psychological flexibility reporting little change on the compACT but a significant reduction in scores on the AAQ-II (indicating decreased psychological inflexibility). P2

reported high psychological flexibility on the compACT at pre-intervention which may offer explanation as to why this did not change, however this leads to questions regarding why P2 regarded perfectionism as problematic for them if psychological flexibility was high. A significant reduction in perfectionism was observed at the six week follow up. This is not in line with the ACT model that high psychological flexibility is associated with better psychological wellbeing. The change in the AAQ-II score may be a result of the one of the known limitations of this measure as critics have argued that the AAQ-II is more a measure of distress than of psychological flexibility (Francis, Dawson & Golijani-Moghaddam, 2016). Changes for P2 were observed to occur following the values phase of the intervention. Interestingly, P2 reported a reliable decrease in scores on the parental expectations subscale of the FMPS. This subscale was hypothesised not to be effected by the intervention as it is considered a state measure. P2 reported increased distress during the present moment awareness phase of the intervention and this was observed across all the subscales of the DASS-21. During the weekly telephone support, P2 had reported factors external to the study which may explain this finding. Additionally, during the change interview, P2 reported that the intervention had not been helpful for her and could not see any behavioural changes which had occurred as a result of the study. P2 stated they could see how the intervention might be helpful for some but that it had not felt relevant to P2 specifically. If P2 felt the intervention was not relevant, this may have impacted on P2's engagement with the self help materials; which might offer some explanation for the conflicting reports of psychological flexibility.

3.5.3 Participant 3 (P3)

Participant 3 (P3) reported increased psychological flexibility, as measured by both the compACT and the AAQ-II and this was maintained at the six week follow up. Improvements were reported across all measures across the study and reliable and clinically significant change was observed on the FMPS with significant improvements in concern over mistakes. Scores on the depression subscale of the DASS-21 were significantly reduced post-intervention. The anxiety and stress subscales remained stable, however these were at sub-clinical levels prior to commencement of the intervention. During the change

interview, P3 reported finding the intervention beneficial and alluded to engaging in more value directed behaviours.

3.5.4 Participant 4 (P4)

Participant 4 (P4) reported a decrease in psychological flexibility from pre-intervention to post-intervention, with a significant increase in score on the AAQ-II at follow up. Despite this, reliable and clinically significant change was observed on the FMPS at post-intervention and follow up. Concern over mistakes and personal standards were also significantly improved at post intervention. These findings suggest that changes in perfectionism may have been the result of something other than the intervention as psychological flexibility had not been improved. P4 had a reduction in time taken to complete the proof reading task, however this was also completed less accurately. Similarly, to P2, P4 reported a reduction in scores on the Parental Expectation subscale of the FMPS; which can not be explained by an improvement in psychological flexibility. Improvements were observed in psychological distress; however, these were not maintained at follow up with a significant increase on the depression subscale at follow up. This could be a result of non-improvement in psychological flexibility as improvements in psychological distress have been considered a secondary impact of improvements in psychological flexibility in previous research. P4 provided little information regarding their views on the intervention during the change interview. One hypothesis could be that P4 had not engaged with the self-help materials in the same way as other participants, possibly explaining the difference in reported changes to psychological flexibility.

3.5.5 Participant 5 (P5)

Participant 5 (P5) reported improvements in psychological flexibility across the study. Upward trends were observed on all weekly measures. P5's daily ACT measure appeared erratic, however this was not reflected in scores on the compACT or AAQ-II at the weekly measures. Significant reductions were reported on the FMPS total score, the concern over mistakes subscale, the personal standards subscale and the doubts about actions subscale. P5 reported significant reductions in distress across the study however stress was

reported to increase at follow up to a score which placed P5 within a clinical sample.

4. Extended Discussion

The study aimed to investigate the impact of a guided self help ACT intervention on psychological flexibility, multidimensional perfectionism and psychological distress.

4.1 What was the impact of the intervention on psychological flexibility?

Psychological flexibility is the overarching construct of the ACT model (Ciarrochi, Bilich, & Godsel, 2010). The main goal of ACT is to support people to behave in a value oriented way (Hayes, 2004). The ACT model is based on the idea that psychological inflexibility or rigidity underlies human suffering and this is targeted through the six ACT processes (Hayes, Strosahl, & Wilson, 2011).

Increased psychological flexibility was observed in four out of five participants as measured by either the compACT total, compACT subscales or the AAQ-II. Multiple baseline single case experimental designs are required to demonstrate replication of an effect across a minimum of three conditions to be deemed as effective (Smith, 2012). Increased scores on each of the compACT subscales were observed across three replications (participants). The results demonstrate that targeting the ACT processes through a guided self help ACT intervention can lead to an increase in psychological flexibility.

The ACT intervention was found to be moderately to highly effective in increasing psychological flexibility according to the time series data. Visual analysis of the weekly measures demonstrated that all participants showed an increase in openness to experience across the study time period. Openness to experience incorporates the acceptance and defusion processes within the ACT model. Increased openness to experience is the reverse of experiential

avoidance. Experiential avoidance is thought to get in the way of behaving in a value driven way due to a lack of contact with the present moment (Hayes, et al., 2011). Changes in openness to experience were observed across participants to begin within the acceptance and cognitive fusion phases of the intervention which preceded changes observed in perfectionism and distress. This suggests that increases in psychological flexibility facilitate changes in perfectionism and distress. This supports previous research which has shown that changes in psychological flexibility precede symptom change (Dalrymple & Herbert, 2007; Hesser, Westin, Hayes & Andersson, 2009).

Overall, the results demonstrate that the ACT intervention improved psychological flexibility across the majority of participants, offering support for the role of a self help ACT intervention in targeting psychological inflexibility.

4.2. What was the impact of the intervention on multidimensional perfectionism?

Concern over mistakes is considered a maladaptive domain of perfectionism which is associated with increased levels of distress (Frost, et al., 1990). The intervention resulted in a reduction in concern over mistakes for all participants over the study period. All participants demonstrated an increase in concern over mistakes from pre-intervention to the baseline measure; this could be interpreted as participants' concern about participating in the study and not performing adequately within it. Three participants reported a decrease in concern over mistakes during the self as context and present moment awareness phases of the intervention. During the self as context phase, the intervention focused on supporting participants to target self conceptualisations and evaluations. The tendency to critically evaluate oneself against high personal standards is hypothesised to be dominant in perfectionists (Hamachek, 1978; Frost, 1990; Shafran, et al., 2002) and by considering self conceptualisations and defusing from implicit evaluations, this may have supported participants to reduce their concern over mistakes. Three participants also reported decreases in concern over mistakes during the values and committed action phases of the intervention. These phases of the

intervention focused on supporting participants to identify their values and commit to and behave in ways that work towards valued living. Being 'perfect' would not be considered a value within the ACT model. During this stage of the intervention, participants may have been able to identify what value(s) their perfectionistic behaviour may be trying to achieve and to consider ways of working towards these values without the critical self evaluation that had accompanied the behaviours. An alternative hypothesis might be that identifying values enabled participants to realise that their current perfectionistic behaviours are not in line with their chosen values. Further research into concern over mistakes and the ACT processes would allow for testing of these hypotheses.

Reliable (3 participants) and clinically significant (2 participants) reductions were observed in Doubts about Actions. This domain of perfectionism links closely with rumination (Frost, et al., 1990) and perfectionistic behaviours such as excessive checking and procrastination (Heimberg, et al., 1995). It is hypothesised that disentanglement from cognitive content related to doubting of actions may have supported reductions in this domain; although the visual analysis does not demonstrate a clear point of change for this dimension of perfectionism. Contradicting this hypothesis, four participants reported an increase in doubts about actions at the six week follow up suggesting the impact of the intervention on this domain was not retained. Further research is necessary to confirm a relationship between increased psychological flexibility and decreased doubts about actions.

Results show that the ACT intervention was moderately effective in reducing perfectionism and resulted in significant improvements in concern over mistakes – a domain associated with increased levels of distress. There is a limited number of empirically supported treatments for perfectionism, therefore ACT may be a viable option.

4.3 What was the impact of the intervention on psychological distress?

Time series data indicated the intervention was highly effective in reducing distress for one participant and moderately effective for three participants.

Visual analysis shows an increase in distress scores from pre-intervention to baseline. This may be a result of the increase in concern over mistakes which was observed at this time. Concern over mistakes is highly correlated with depression and anxiety (Frost, et al., 1990). Reductions in distress occurred during the present moment awareness and values phases of the intervention for most participants (with the exception of P2). The present moment awareness phase of the intervention taught participants mindfulness exercises to support them to engage with the present moment. Mindfulness exercises have been shown to have positive effects on distress in previous research (Jain, et al., 2007; Shapiro, Astin, Bishop & Cordova, 2005).

Participant four reported an increase in distress at post-intervention and follow up. This may be a result of the loss of support following completion of the study or may be due to external factors (P4 had been on a break from university for the majority of the intervention stage but had returned and had exams at the follow up period).

The influence of external factors is considered for two participants which gives rise to concern over the effectiveness of the intervention. The external factors under consideration were things that would likely have increased levels of distress in participants, however, active engagement in the ACT intervention was hypothesised to lead to reductions in distress and this was not evident when additional life stressors presented. The ACT model does not include a relapse prevention element as acceptance and commitment is considered a flexible and ongoing experience (Hayes, et al, 2012). The process of engaging in valued living is ongoing which means that changing the function of one's private experiences may take more time than the study period allowed for. ACT has been shown to have an incubation effect in previous research due to individuals building a history of moments of disentanglement with distressing private events (Hayes & Lillis, 2012).

4.4 Measures

A number of measures were used within the study and repeated measurement may have compromised the psychometric properties of the measures, e.g., practice effects/boredom.

4.4.1 Measures of psychological flexibility

The compACT and the AAQ-II claim to be measuring the same construct of psychological flexibility. If this claim was substantiated, it would be expected that participants reporting increased psychological flexibility on the AAQ-II would also report increased psychological flexibility on the compACT. Results in the present study do not show this. The AAQ-II has been criticised for having poor face and content validity (Francis, Dawson & Golijani-Moghaddam, 2016), with some claiming it is a measure of distress outcomes rather than of psychological flexibility (Gamez, Chmielewski, Kotov, Ruggero & Watson, 2011). The compACT, however, is newly developed and requires additional testing to further confirm its factor structure and psychometric properties. The compACT has more items than the AAQ-II and its consolidation of the six ACT processes into three dyadic processes could impact on how the processes are measured. Although some ACT proponents have argued for a three factor structure rather than the six factors covered within the psychological flexibility hexaflex (e.g. Hayes et al., 2011).

Changes observed across participants in the ACT processes offer merit to the compACT as a viable method of measuring the ACT processes. Changes in openness to experience occurred for four out of five participants during the acceptance and cognitive defusion phase of the intervention as would be expected as these are the processes underlying the openness to experience subscale. Additionally, increases in behavioural awareness were observed across participants during or following the present moment awareness phase of the intervention and increases in valued action were observed during the values and committed action stages of the intervention. The behavioural awareness subscale aims to target mindful attention to current actions and the valued action subscale indicates greater engagement in valued actions (Francis,

Dawson, & Golijani-Moghaddam, 2016) therefore observation of changes at these times lends support for this subscale's content validity.

More broadly, there is question regarding the use of static self report measures for assessing dynamic ACT processes and whether such measures are sufficient in doing so (Francis, Dawson & Golijani-Moghaddam, 2016; Kashdan & Rottenberg, 2010).

4.4.2 Daily measurement

The daily measure was comprised of questions from the four weekly measures (FMPS, DASS-21, compACT and AAQ-II). This was designed to enable the identification of a stable baseline across the variables under examination. To keep the daily measure short, to ensure participants engagement with it, this meant that only a few questions could be taken from each measure.

It is likely that the scores on the daily measure were not indicative of participant's levels due to the small number of items pertaining to each variable. This was particularly evident when comparing the daily ACT scores of participant 5 with their weekly scores; they did not appear to coincide. Future research may wish to consider using one psychometric measure which targets the key variable of the research. For example, using a full measure of psychological flexibility as the daily measure may have enabled a clearer baseline and may have demonstrated clearer relationships between the ACT processes and changes in psychological flexibility, perfectionism and distress.

4.5 Methodological considerations

4.5.1 The separation of the ACT processes

As the book chapters were delivered to relate to each of the ACT processes, this meant that in some weeks, participants were required to read more chapters than in others. For example, during the acceptance phase, participants were required to read four chapters of the book which pertained to acceptance and during the present moment awareness phase, participants

were only required to read one chapter. This may have influenced results due to participants receiving a 'higher dose' of ACT during the acceptance phase compared with other phases of the intervention. However, as changes appeared to occur for most participants during the middle of the intervention, this does not seem likely. However, change may have occurred at this time due to the reduced effort required and a sense of relief which may have impacted on engagement with the tasks and/or self reporting of distress.

Additionally, some participants required longer to complete their book chapters than others leading to different lengths within each participant's intervention phases. Participants who had longer may have had more opportunity to engage with the material.

All participants received the book chapters in the same order; acceptance, cognitive defusion, self as context, present moment awareness, values and committed action. Randomisation of chapters would offer strength to inferences made from the results of the study as it would allow observation of whether changes occurred during the same phases of the intervention despite these phases occurring at different time points across the intervention phase. Randomisation of chapters was not possible with the text that was used in the study (Hayes & Smith, 2005) as some chapters made excessive references to other chapters and therefore could not be read prior to the other chapters. For example, the chapter pertaining to the committed action phase of the intervention focuses on behavioural change to act in accordance with one's values, it would not be possible to complete or engage in the exercises within this chapter without having completed the chapter on values.

4.5.2 The use of self help materials

Due to the study design of using self help materials, it is difficult to determine the extent to which each participant engaged with the materials provided; this was checked through the weekly support phone calls and the change interview however false reporting can not be ruled out. As the change interview was conducted retrospectively, it may have been subject to social desirability, recall bias and/or contextual factors (Van de Ven & Huber, 1990).

4.5.3 Follow up period

The follow up period was only 6 weeks post-intervention. A longer follow up period would have been beneficial to evidence whether changes were maintained, particularly given the suggested incubation effect of ACT that has been seen in previous studies. This may have strengthened the results of the study when comparing a self help ACT intervention to other potential perfectionism interventions, particularly CBT.

4.5.4 Analysis of reliable and clinically significant change

RCI and CSC analyses were considered important for strengthening the understanding of the impact of the intervention on the outcome measures. However, the RCI and CSC results within this study should be considered cautiously due to the nature of the measures used within the study. The compACT is newly developed and there is limited data on which to base assumptions regarding clinical significance. Additionally, perfectionism is not considered a clinical difficulty and therefore suggestion that someone has moved from a clinical population to a non-clinical population in terms of their perfectionism is not empirically supported. To enable the use of CSC despite these limitations, analysis utilised the criterion b approach (Jacobson & Truax, 1991) whereby post-intervention scores are considered within two standard deviations of the mean score of a non-clinical population, rather than considering the results in line with clinical groups.

4.6 Generalisability

All participants were female and recruitment occurred within the general public. Although recruitment focused on individuals who self reported difficulties associated with their perfectionism, they are not necessarily representative of those who may seek treatment for psychological distress or psychopathological difficulties associated with their perfectionism.

4.7 Clinical Implications

Overall results contribute to the evidence for ACT as an intervention with some support for a guided self help ACT intervention for perfectionism and its associated distress. All participants showed improvements in some aspects of their perfectionism or distress as well as showing increased psychological flexibility – although a causal relationship can not be established. All participants reported good engagement with the materials and all participants completed the study. Good engagement and lack of attrition has good implications for the cost effectiveness of such an intervention. There is currently a lack of empirically supported treatments for perfectionism despite theorist's hypothesis that targeting this construct will lead to symptom reduction across a number of psychological disorders (Howell, et al., 2016). The results from the current study support this hypothesis demonstrating that increased psychological flexibility preceded reductions in perfectionism and reductions in distress.

The results, however, should be considered within the limitations outlined and the inconsistent findings across the sample of participants. As the results were inconsistent across participants, further research is needed to explore why the intervention worked for some participants in some areas but not consistently for all.

The results do provide information regarding possible mechanisms of change within ACT treatment which is a necessary and important aspect of research and development of improved intervention outcomes (Kazdin, 2007).

Reductions in perfectionism and distress were observed across the present moment awareness, values and committed action phases of the intervention. Changes viewed in the ACT processes across time provide support for processes being important for outcome, however, it is not possible to determine causation from this study and the changes can only be hypothesised as being related to the processes (Hayes, Pistorello & Levin, 2012). It is possible that change occurred as a result of socialisation to the ACT model (Sheldon, Clarke & Moghaddam, 2015).

The use of a self help format enabled efficient treatment at a reduced cost; an important consideration for treatment interventions in the current political climate. The moderate to high treatment effects found in the current study alongside the changes observed through visual analysis suggest that the treatment had an effect despite the limited therapist contact. Offering an ACT intervention to perfectionists who report high levels of distress could prove beneficial, however three participants in this study reported that they only engaged with the workbook as they were aware that they would be contacted by the lead researcher each week and would need to discuss the chapters. This suggests that without the weekly support, participants may not have engaged with the materials in the same way. Offering self help interventions to perfectionists without guided support may not be beneficial as levels of engagement may be poorer and perfectionists may also avoid completing the workbook as part of their perfectionistic behaviour. This suggests that a self help intervention may be helpful for treating perfectionism only where there is regular therapist contact and support.

4.8 Future research recommendations

Present moment awareness and valued action have shown promise as mechanisms of change within the present study. Further investigation of these processes would offer clearer understanding of why these processes may facilitate change and how therapeutic interventions can be improved to incorporate these features. In particular, it is unclear why these processes may have resulted in reductions in perfectionism. It is hypothesised that the processes relate to the underlying concepts of perfectionism, including the tendency for critical evaluation and rumination related to negative perfectionism related information. Further investigation of the relationship of these elements of perfectionism with the ACT processes will support understanding.

The current focus of treatment for perfectionism is CBT and this research has supported the use of ACT as a viable treatment for perfectionism and associated distress. It is not known whether ACT would result in better outcomes than a CBT intervention. Future research could consider a

comparison of these treatment models for perfectionism with a focus on both efficacy, improvements to quality of life and cost effectiveness.

Research investigating the specific ACT processes is limited therefore making generalisability of the results of the current study more difficult. Future research examining the ACT processes and mediators of change would be beneficial in developing an understanding of the implications of an ACT treatment model.

This would enable strengthening of inferences regarding specific ACT processes as mechanisms of change. For example, present moment awareness has been highlighted as a possible mechanism of change within this study. If present moment awareness as a mediator of change was replicated across studies, this would support the results of this study.

Research has shown that those high in perfectionism have worse treatment outcomes for other difficulties, it would be interesting to compare treatment outcomes (e.g. depression or anxiety treatment) for those who have completed an ACT intervention for perfectionism prior to other treatment with those who have not.

Finally, the study sample was all female. Some research indicates perfectionism in men has strong associations with suicidality, it would be helpful to consider whether this intervention would yield similar results in a male sample.

5. Critical Reflection

This section outlines my critical reflections on the research process.

My initial thoughts regarding my research project are quite distinct from what has been completed and presented. I began with the topic of perfectionism, something I have always been interested in. My interest in perfectionism comes from life experience and clinical practice. I consider myself a perfectionist in some areas of my life and certainly recognise in myself some of the perfectionistic behaviours identified in the literature, such as procrastination on tasks that I worry I can not complete satisfactorily. Alongside this, perfectionism is something I have noticed within my clinical practice and I have always

considered perfectionism within formulations of client's difficulties, although it has never been the subject of planned interventions. My initial research proposal was regarding the impact of perfectionism on suicidality. However, subsequent reading around this topic suggested that there is a breadth of research regarding the role of perfectionism in suicide yet there was little research regarding treatment or intervention for perfectionism itself. Further reading highlighted that the only treatment that had been considered for perfectionism was CBT which led me to consider how other intervention strategies could also be of benefit.

I personally align myself with the ACT notion of the ubiquity of human suffering and acknowledge that this also impacts on my clinical work with clients. I was therefore interested in considering perfectionism from an ACT perspective and decided to investigate the impact of an ACT intervention on perfectionism.

When designing my research protocol, I debated the appropriate methodology for my research question. RCT's are considered the gold standard for assessment of the effectiveness of therapeutic interventions and I considered this as a possible avenue for the research. However, my reading around the ACT literature had led me to conclude that research examining the specific ACT processes was necessary. One of the pre-requisites of doctoral research is the addition of new information to promote progress in research and clinical practice and the gap in the literature pertaining to specific mechanisms of change within the ACT model led me to believe that a SCED would be a more appropriate methodology as it would allow for exploration of the ACT processes, in addition to investigating the impact of a guided self help ACT intervention on perfectionism – my topic of choice. Furthermore, developing skills in SCED, I believe, is of more benefit to me as a clinician as this is the type of research I am more likely to conduct in the future as a scientist practitioner.

A challenge I found with conducting a series of single case designs was keeping on top of participant's engagement with the study and ensuring materials were sent out in time. To manage this, I had to develop my organisational skills and used tools such as setting reminders and making lists to ensure I kept up to date and managed participation efficiently and effectively.

I developed a compliance measure to ensure that contact with each participant was consistent and enabled me to check levels of engagement. The decision to use online survey technology for participants to complete outcome measures was pragmatic and felt important to reduce the possibility of social desirability bias.

The decision to include analysis of reliable and clinically significant change was the result of both reading of extant SCED literature and through guidance from my research supervisors. This appeared to be a missing element from much of the SCED literature that was reviewed. With the reliance on RCT methodologies as evidence of efficacy, I wanted to ensure that this study demonstrated a thorough analysis of the effectiveness of the intervention, therefore reliable and clinically significant change were included as well as consideration of treatment effect sizes.

An important question for me when conducting this research was why change may have occurred and I feel the SCED methodology is the most appropriate for answering this question. As a scientist-practitioner, it is important to me to understand the most helpful way of supporting clients and this means knowing why an intervention may work for them rather than just knowing that it works.

One of the main outcomes within this study was the measurement of distress. Prior to beginning the study, I had not considered the impact of being privy to this information without being able to act upon it. One of the participants in the study had completed the DASS-21 measure at pre-intervention and on scoring this, I became aware that this participant was reporting severe distress across the domains of the DASS-21. This was challenging for me, as I am trained as a researcher but also as a clinician and it was uncomfortable to be aware that someone was highly distressed and not be able to support them with this outside of the research. I used my research supervision to discuss this and a decision was made to signpost the participant to support services. This had implications for the study results as it would be unclear whether any changes observed in this participant's distress would be the result of the study intervention or support gained through accessing their GP. Despite this, it felt

most ethical, professional and more importantly human to enable the participant to seek support if they wished to do so.

Completing this research has been an interesting process for me. I identify myself more as a clinical practitioner than a researcher but on writing this thesis, I have become more interested in the process of research and how it can benefit clinical practice.

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Appendices

Appendix A

Recruitment Advert

Are you a perfectionist?



Procrastination?



Worrying about getting things wrong?



Constant checking?



Doubts about your actions?

Is it getting in the way of your studies? Getting in the way of your social life? Just plain getting in the way?



I am currently recruiting participants to take part in research that is seeking to use Acceptance and Commitment Therapy (ACT) to help with perfectionistic traits.

Often perfectionists will spend time thinking over a problem, issue or event and this impacts on day to day life. Perfectionism can get in the way of everyday experience leading to a number of problems in life. ACT works to guide people towards acceptance and engaged living through moment to moment awareness.

Participants will be asked to read chapters from a book over a number of weeks alongside completing some other tasks. There will be a 3 month follow up meeting where you will be asked to complete some questionnaires and be interviewed on your experience. ***You will be offered compensation for your time.***

If you are interested in taking part in this study, please use the link below to see more information and complete an online questionnaire:

Or if you would like any further information, please contact the researcher on the details below. This contact does not mean you are agreeing to participate. You will be provided with further information and the opportunity to ask questions. After this, if you wish to participate, you will be asked to complete an online questionnaire.

Researcher contact: Jenna Hunt 14498819@students.lincoln.ac.uk

Appendix B

Participant Information Sheet

ACTing on Perfectionism. A single case experimental design examining the effect of acceptance and commitment therapy on multi-dimensional perfectionism

Name of Researcher(s): Jenna Hunt (Trainee Clinical Psychologist)

I would like to invite you to take part in this research study. Before you decide I would like you to understand why the research is being done and what it would involve for you. Talk to others about the study if you wish.

What is the purpose of the study?

The study aims to investigate whether a self help Acceptance and Commitment Therapy (ACT) intervention will impact on perfectionism and psychological distress.

People often spend time occupied by the thoughts in their head and subsequently miss out on actual everyday experience. ACT is a third wave Cognitive Behavioural Therapy which focuses on improving psychological flexibility in individuals and aims to support people to develop acceptance and awareness of the moment guiding them towards the things they value in life. ACT has been used as an effective therapeutic intervention for a number of mental health difficulties including anxiety, depression, eating disorders and suicidality. The psychological distress that can accompany perfectionism has been linked to these difficulties and research has shown that targeting perfectionism as a stand-alone concept can improve psychological distress.

Why have I been invited?

Perfectionism is a trait found in many people. This study seeks to explore the impact of ACT on perfectionism via the use of a guided self-help intervention.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, you can continue with the online questionnaire which brought you to this page. Prior to completing the questionnaire, you will be asked to tick a box to indicate

your consent to participate. **If you choose not to take part, you will not be asked to complete anything further.**

If you decide to take part, you are still free to withdraw from the study without giving a reason. You will be provided with a unique code to identify your information should you wish to withdraw your consent during the study. If you withdraw then the information collected so far cannot be erased and this information may still be used in the project analysis.

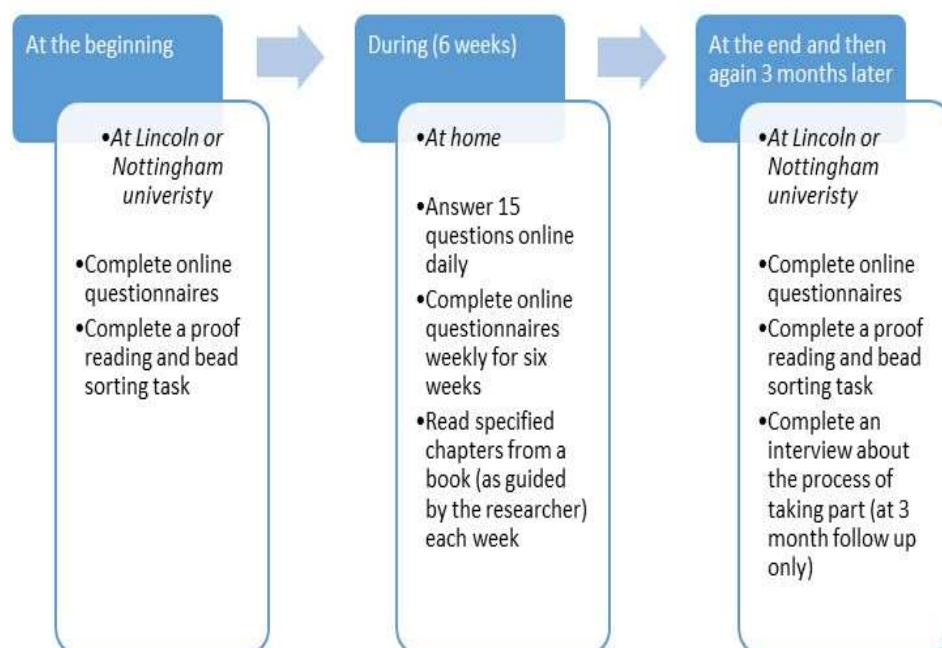
What will happen if I don't want to carry on with the study?

Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your legal rights being affected. If you withdraw then the information collected so far cannot be erased and this information may still be used in the project analysis.

What will happen to me if I take part?

If you choose to participate in the study, you will be asked to complete an online screening tool. Following this, you will be contacted by the researcher and either asked to continue with the study or thanked for your participation up to this point.

If you are asked to continue with the study, a meeting will be arranged with the researcher and the study will be discussed in full. If you choose to take part, you should expect to do the following:



Support from the researcher will be available at all times. You will be given contact details and will receive daily texts and a weekly phone call.

Payment

Participants will be paid to participate in the study. £5 will be given after submission of the weekly questionnaires and £10 following the final interview. This will mean participants will receive £40 in total throughout the study.

What are the possible disadvantages and risks of taking part?

If you take part in the study, you will be completing tasks daily and weekly which will take time. It will be important to maintain a good balance between completing the study tasks and completing your personal work load and relaxation time. The principal researcher will be in regular contact with you and should you find that you are having any difficulties while participating in the study, support will be offered and you will be signposted to appropriate support services where necessary.

What are the possible benefits of taking part?

You may find that participating in the study makes a difference to your perfectionistic tendencies however we cannot promise the study will help you but the information we get from this study may help explain how it may help in the future.

Will my taking part in the study be kept confidential?

If you wish to participate, it is important that you understand that your personal details will not be used within the report produced. No identifiable data about you will be shared. We will follow ethical and legal practice and all information about you will be handled in confidence.

If you join the study, the data collected for the study will be looked at by authorised persons from the Universities of Lincoln and Nottingham who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

All information which is collected about you during the course of the research will be kept strictly confidential, stored in a secure and locked office, and on a password protected database.

Your personal data (address, telephone number) will be kept for one year after the end of the study so that we are able to contact you about the findings of the study and possible follow-up studies (unless you advise us that you do not wish to be contacted). All other data (research data) will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all

precautions will be taken by all those involved to maintain your confidentiality, only members of the research team will have access to your personal data.

What will happen to the results of the research study?

Once all the data has been collected, it will be analysed and a report will be written. You will receive a brief report on the results of the study. This report will be included as part of the main researcher's thesis for the qualification of Doctorate in Clinical Psychology. This means it will be accessed by staff and students at the universities of Lincoln and Nottingham. There is a possibility that the report will be published in the future making it widely accessed. ***Please remember – you will not be identified in the report.***

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. The researchers contact details are given at the end of this information sheet. If you have concerns regarding the ethical practice or conduct of this study, please contact the Lincoln University Ethics Committee: soprec@lincoln.ac.uk

Further information and contact details

If you have any further questions regarding the study, or would like to discuss any concerns, please contact the researcher using the details provided.

Jenna Hunt

Trainee Clinical Psychologist

14498819@students.lincoln.ac.uk

Thank you for taking the time to consider participation in this study.

Appendix C

Daily Measure

Thinking back over your experiences today, please rate the following statements:	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
One of my big goals was to be free from painful emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I behaved in line with my personal values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worked hard to keep out upsetting feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hated being less than the best at things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was important to me that I be thoroughly competent in everything I do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could take thoughts and feelings as they come, without attempting to control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

or avoid them							
Even when doing the things that matter to me, I found myself doing them without paying attention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rushed through meaningful activities without being really attentive to them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found it hard to wind down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I couldn't seem to experience any positive feeling at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My values were really reflected in my behaviour	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could identify the things that really matter to me in life and pursue them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt I was close to panic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emotions caused problems in my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I had doubts about the simple everyday things I did	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix D

Compliance Measure

Have you read the chapters?

If not, why?

What stood out for you? Why?

What did you think was particularly relevant for you/your perfectionism?

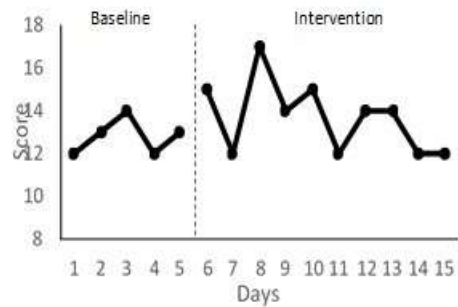
What were the challenges/difficulties?

How will you use what you have read?

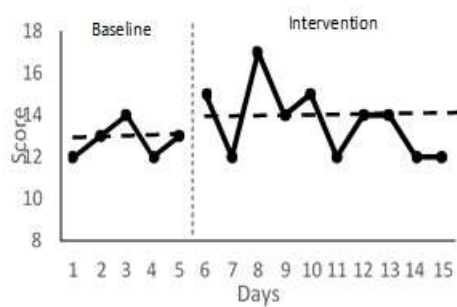
Appendix E

Parameters Considered when Visually Analysing the Daily Time-series Data

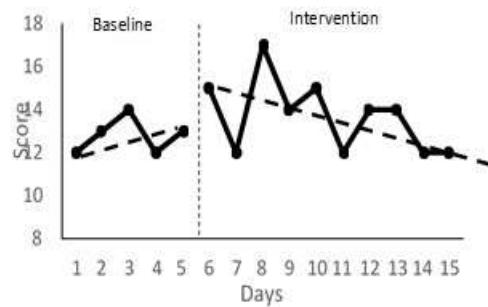
a. Raw data



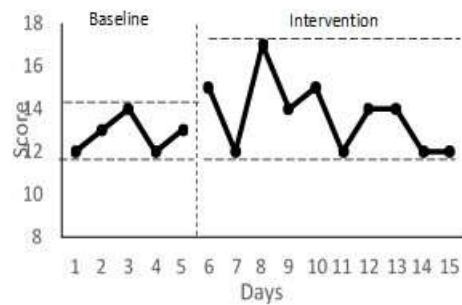
b. Central Tendency



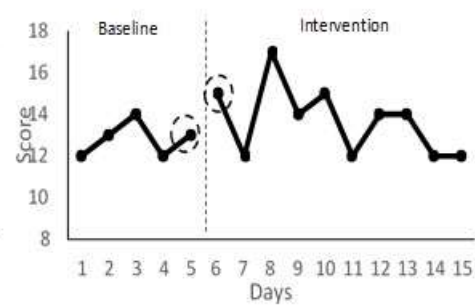
c. Trend



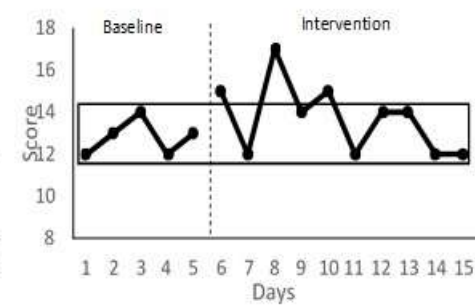
d. Variability



e. Point of Change



f. Overlap Region



Appendix F

Change Interview Schedule

Change interview

(Introduce self and remind participant about confidentiality)

1. Can you please tell me how you found the intervention / workbook?
2. Was the book easy to read and understand? (If not, why?)
3. Would you recommend this book to others?
4. Were there any chapters in the book you found helpful?
5. What would you say has changed for you? (Ask this first then ask a, b and c)
 - a. Have you noticed a change in your perfectionism? And if so, in what area? (less concerned about mistakes, no longer doubting actions, less critical of performance, taking less time to complete tasks, etc.)
 - b. Have you noticed any changes in your behaviours since completing the study? Has this had an impact on your perfectionism?
 - c. Have you noticed any changes in the way you are living your life since completing the study? Has this had an impact on your perfectionism?
6. In your opinion were these positive or negative changes?
7. Can you rate how surprised you were by these changes from 1 (not surprised by the changes) to 5 (surprised by the changes)?

1	2	3	4	5
Not surprised by the changes		Neutral		Surprised by the changes

8. Please rate how likely it is that these changes were a result of reading the workbook from 1 (not likely) to 5 (likely)?

1	3	5
Not likely	Neutral	Likely

9. Rate the importance of these changes from 1 (not important) to 5 (important)?

1	3	5
Not important	Neutral	Important

10. Have you had any thoughts about how you might carry forward what you have learnt from completing the study? If yes, what? How will you do so? Why is this important to you? Does this relate to your perfectionism or something else in your life?

11. Has participating in the study met your expectations? (Did it do what you wanted it to? Has it met your goals related to your perfectionism?)

12. Did any external events occur during the study time period? (In the areas of work or relationships etc. for example). If so, do you think this may have had an effect?

13. Can you tell me how you found the researcher support?

14. Is there anything you think could be improved for future similar research?

Any additional comments?

Appendix G

Participant Debrief Sheet

Thank you for participating in this study.

The aim of this research was to examine the effectiveness of Acceptance and Commitment Therapy as an intervention for perfectionism with secondary impact on psychological distress.

The bead tasks and proof reading task you completed were to consider the behaviours associated with perfectionism and whether these changed following the ACT intervention. You were asked to complete a daily measure to allow analysis of time series data on any changes in ACT processes, perfectionism or reported distress. The weekly measures were to enable examination of how the different ACT processes may have impacted on perfectionism, distress and psychological flexibility.

For further information regarding the aims and purposes of the study, please refer to your participant information sheet.

Your responses and information have been kept anonymous and confidential therefore individual feedback cannot be given. If you would like a summary of the study findings, please inform the lead researcher who will email this to you following completion of the data analysis.

If you decide to withdraw consent for your data to be used, this will need to occur within two weeks of your final meeting with the researcher. After this point, the data will have been analysed and therefore cannot be removed from the study.

If participating in this study has raised any questions or concerns for you and you need somebody to talk to, we have provided details of the principal researcher, their supervisor and the Lincoln University ethics committee below and links to further sources of support.

Thank you and best wishes,

Jenna Hunt

Further information and contact details:

Jenna Hunt

Principal Investigator

programme

14498819@students.lincoln.ac.uk

Supervisor

Dr Dave Dawson

Research tutor on DClinPsy

University of Lincoln

Brayford Wharf

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LN6 7TS

ddawson@lincoln.ac.uk

01522 837336

2nd Supervisor**Dr Mark Gresswell**

Co-director of Trent Doctorate in Clinical Psychology

University of Lincoln

Brayford Wharf

Lincoln

LN6 7TS

mgresswell@lincoln.ac.uk

01522 886820

Lincoln University Ethics Committee (SOPREC):

SOPREC@lincoln.ac.uk

Please contact SOPREC if you have any concerns regarding the study.

Support services and Helplines:

In the unlikely event that you have found taking part in this study distressing you should seek support. Below there are a number of options and details which you may find useful.

Your local GP may offer you support and refer you for specialist services.

Lincoln University Student wellbeing: 01522 886400

<http://studentservices.lincoln.ac.uk/student-wellbeing-home/>

Samaritans (24 hours a day) 08457 909090: www.samaritans.org

NHS direct available 24hours a day for expert health advice and information, call 0845 4647

Appendix H

Confirmation of Ethical Approval

Email from SOPREC

Dear Jenna

This is to confirm your recent resubmission of ethical approval was conditionally approved with the following changes required:

□□□□□□ At what time do they sign a consent form?

□□□□□□ Is this before the online screening? If so is this necessary? Or is it once selected as one of 6. Please clarify.

□□□□□□ Participants cannot withdraw data once submitted? At what stage is it too late? Can they withdraw the screening data? It is suggested that data is not possible to withdraw if leave test before end. Does analysis have to occur before the end?

□□□□□□ Researcher email is needed on the advertisement.

□□□□□□ NO debrief sheet with info of who to contact in concerned (probable something needed after each stage)

Please see that debrief contains:

Details of how to withdraw data within a given period (say one or two weeks) Make limitations clear

The researchers name and email address

Supervisors email and name

the school ethics committee (SOPREC) email address should participants want to discuss any concerns with the ethics of the study. SOPREC@lincoln.ac.uk

Maybe if the questionnaire raises concerns they might wish to contact student wellbeing or other sources if not wanting to contact the clinical course team.

Debrief needs to debrief the participant– ie give some info about the study – which you do of course do in detail elsewhere

-
Your supervisor can approve the changes, there is no resubmission required.

Regards

Soprec

School of Psychology Research Ethics Committee |
SOPREC

3. Research Supervision Log Sheet



Trent Doctorate
in Clinical Psychology



Name:

Jenna

Hunt

Intake: 14/15

Supervisor's Name: Dave Dawson and Mark Gresswell

Supervision No.	Date	Approx. Time spent	Member of staff seen
10	18 th March 2016	1 hour	Mark Gresswell Dave Dawson
Topics covered			
Review of actions from last supervision (please expand boxes as necessary):			
Achievements: <ul style="list-style-type: none"> Jenna has got the Frost multidimensional perfectionism scale Changes to ethics have been approved Jenna has reviewed the self-help materials and decided on the use of the "Get out of mind and into your life" book by Steven Hayes (2005) 			
Difficulties/challenges: <ul style="list-style-type: none"> Jenna to continue developing her understanding of ACT Jenna still unclear on an argument for the use of the IRAP – following discussion, it agreed to remove the IRAP from the project 			
Adherence to time-line: <ul style="list-style-type: none"> Project is taking shape but recruitment needs to begin asap 			
Contact with Field Research Supervisor (if applicable): N/A			
General progress: <ul style="list-style-type: none"> See achievements and challenges Jenna has begun to develop the screening tool on Qualtrics Jenna has sourced all measures needed for project Discussion regarding using the compact as a measure of ACT processes Discussion regarding randomisation of book chapters – Jenna to think about this 			
Actions agreed: <ul style="list-style-type: none"> Jenna to remove IRAP from project – inform ethics board Jenna to complete screening tool on Qualtrics Jenna to develop daily measure Jenna to revise advert for recruitment Jenna to begin writing extended background. Jenna to examine face validity of book if chapters were to be randomised 			

Email from SOPREC re: changes to ethics

Change to Ethics

2

AH

Aidan Hart

Fri 07/10/2016, 13:54

Hi Matt,

I have spoken to Jenna about this this morning and am satisfied that these changes can be approved by chairs action and I am doing so with immediate effect.

Best wishes

Aidan

JH

Jenna Hunt (14498819)

Fri 07/10/2016, 11:43

Hi Matt,

Thanks for getting back to me. I have spoken with my supervisors and Aidan Hart today regarding the changes and would like to make the changes outlined below:

□□□□□□ The change interview will be the same interview delivered to the same people but at a different time – 6 week follow up rather than three month follow up

□□□□□□ The follow up time to be changed from 3 months to 6 weeks post-intervention – again the same measures will be delivered to the same people just at a different time – 6 weeks rather than three months post-intervention.

Thank you,

Jenna

Appendix I

Permission for use of proof reading task

Hello Jenna,

Pls see the attached docs.

I think this is what we used for the Stoeber & Eysenck 2008 article, but not 100% sure as we did this research 10-11 years ago, so pls double-check against the details in the article.

Hope this helps.

All best,

Joachim

Joachim Stoeber, PhD | Professor of Psychology | School of Psychology
Keynes College, University of Kent, Canterbury, Kent CT2 7NP, United Kingdom
Phone: +1227 824196 | Fax: +1227 827030 | Email: J.Stoeber@kent.ac.uk

Tue 21/06/2016, 13:26

Dear Professor Stoeber,

I am a trainee clinical psychologist at Lincoln university and for my doctoral research I am looking at the effectiveness of Acceptance and Commitment Therapy as an intervention for perfectionism. As part of my research, I am asking participants to complete a proof reading task similar to that used by yourself in your previous publications (Stoeber, J., & Eysenck, M. W. (2008). Perfectionism and efficiency: Accuracy, response bias, and invested time in proof-reading performance; Stoeber, J. (2011). Perfectionism, efficiency, and response bias in proof-reading performance: Extension and replication.). I was wondering if you have a copy of the task you used in your research as I am hoping to replicate this or if you have any advice/guidance on how to choose the written piece for participants to read.

I would be very grateful for any help/information you can offer.

Thank you,

Kind regards,

Jenna

Jenna Hunt

Thesis Poster

ACTing on Perfectionism

Conclusions: The study offers mixed results regarding the efficacy of ACT as an intervention for perfectionism. Despite this, most participants demonstrated improvement in perfectionism and increased psychological flexibility as a result of the intervention indicating it's success as a treatment for those participants. Further research is warranted.

Background:

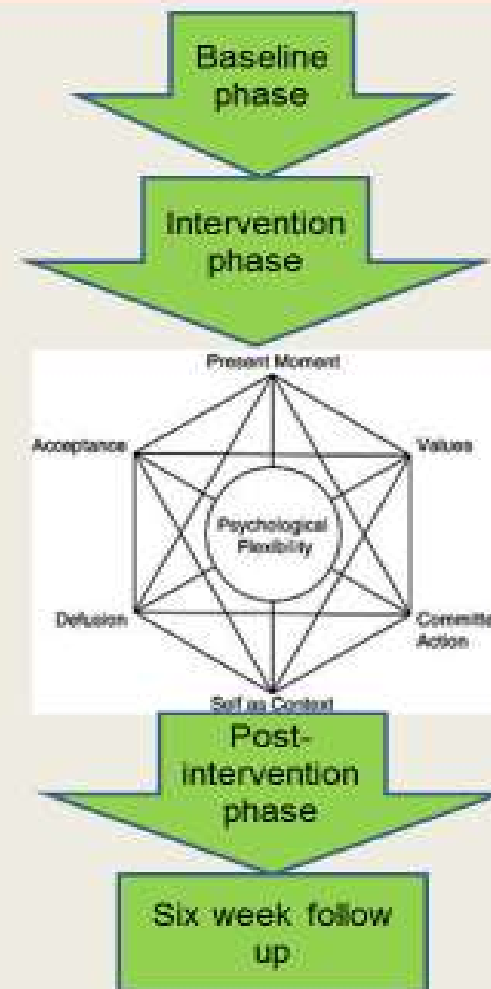
Perfectionism has been associated with psychological difficulties, including depression, suicidality and anxiety disorders. Perfectionism is transdiagnostic and some researchers suggest that interventions targeting perfectionism will lead to improvements in symptoms across many disorders.

The evidence for ACT interventions in reducing psychological distress across a range of domains is growing rapidly. Self guided ACT interventions have been shown to lead to improvements in positive mental health following intervention.

Present Study:

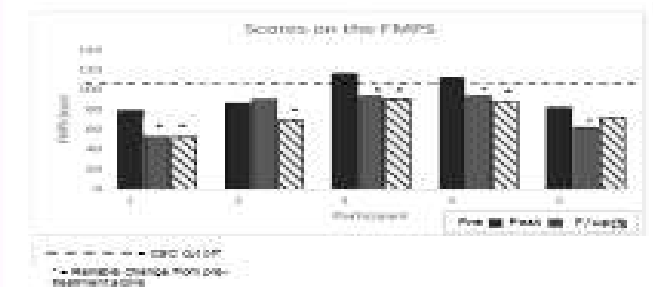
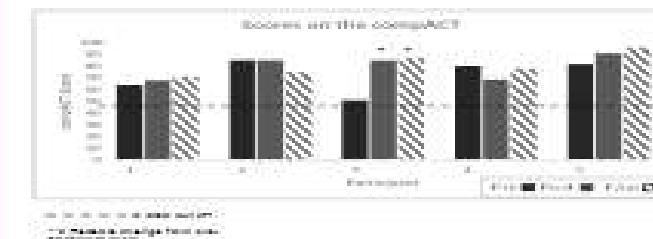
A single case experimental design was used to examine the impact of a self-help ACT intervention on psychological flexibility, perfectionism and associated psychological distress.

Visual analysis and reliable and clinically significant change were used to analyse the results.



Results:

- Increased psychological flexibility across all participants
- Improvements in perfectionism; specifically perfectionistic concern over mistakes
- Improvements in psychological distress



- References:** Wilson, C., Hunter, S.C., Rasmussen, S., & McGowan, A. (2014). They made you perfect: A test of the Social Reaction Model of perfectionism. *Aggressive Behaviour*, 9999, 1-11.
- O'Connor, R.C., (2007). The relations between perfectionism and suicidality: A systematic review. *Suicide and Life-threatening Behaviour*, 37(6), 698-714.
- Egan, S.J., Wade, T.D., & Shafran, R. (2011). Perfectionism as a transdiagnostic process: A Clinical review. *Clinical Psychology Review*, 31, 203-212.
- Howell, J. A., McEvoy, P. M., Grafton, B., Macleod, C., Kane, R. T., Anderson, R. A., & Egan, S. J. (2016). Selective attention in perfectionism: Dissociating valence from perfectionism-relevance. *Journal of behavior therapy and experimental psychiatry*, 51, 100-108.